

Master List

Summary of Review IRIS Uncertainty Factors with a Unit or Null Value

Support for EPA's Integrated Risk Information System

July 31, 2012

Reference Dose (RfD)		
Line No.	Substance	Last sig rev
1	Acenaphthene	1990
2	Acenaphthylene	1991
3	Acephate	1989
4	Acetaldehyde	1991
5	Acetochlor	1993
6	Acetone	2003
7	Acetonitrile	1999
8	Acetophenone	1991
9	Acetyl chloride	1991
10	Acifluorfen, sodium	1987
11	Acrolein	2003
12	Acrylamide	2010
13	Acrylic acid	1994
14	Acrylonitrile	1991
15	Adiponitrile	1991
16	Alachlor	1993
17	Alar	1988
18	Aldicarb	1993
19	Aldicarb sulfone	1993
20	Aldrin	1991
21	Allyl	1988
22	Allyl alcohol	1988
23	Allyl chloride	1991
24	Aluminum phosphide	1987
25	Amdro	1987
26	Ametryn	1987
27	4-Aminopyridine	1989
28	Amitraz	1988
29	Ammonia	1991
30	Ammonium acetate	1991
31	Ammonium methacrylate	1991
32	Ammonium sulfamate	1989
33	Aniline	1990
34	ortho-Anisidine	1991
35	Anthracene	1991
36	Antimony	1991
37	Antimony trioxide	1995
38	Apollo	1991

39	Aramite	1991
40	Aroclor 1016	1993
41	Aroclor 1248	1994
42	Aroclor 1254	1994
43	Arsenic, inorganic	1995
44	Arsine	1994
45	Asbestos	1988
46	Assure	1991
47	Asulam	1988
48	Atrazine	1993
49	Avermectin B1	1989
50	Azobenzene	1991
51	Barium and Compounds	2005
52	Barium cyanide	1991
53	Baygon	1987
54	Bayleton	1988
55	Baythroid	1988
56	Benefin	1987
57	Benomyl	1987
58	Bentazon (Basagran)	1998
59	Benz[a]anthracene	1994
60	Benzaldehyde	1988
61	Benzene	2003
62	Benzidine	1991
63	Benzo[a]pyrene (BaP)	1992
64	Benzo[b]fluoranthene	1994
65	Benzo[g,h,i]perylene	1990
66	Benzo[k]fluoranthene	1994
67	Benzoic acid	1991
68	Benzotrichloride	1990
69	Benzyl chloride	1992
70	Beryllium and compounds	1998
71	Bidrin	1987
72	Biphenthrin	1988
73	1,1-Biphenyl	1991
74	Bis(2-chloro-1-methylethyl) ether	1989
75	Bis(2-chloroethoxy)methane	1991
76	Bis(chloroethyl)ether (BCEE)	1991
77	Bis(chloromethyl)ether (BCME)	1991
78	Bisphenol A.	1988
79	Boron and Compounds	2004
80	Bromate	2001
81	Brominated dibenzofurans	1990
82	Bromobenzene (subchronic)	2009
83	Bromobenzene (chronic)	2009
84	Bromochloromethane	1991
85	Bromodichloromethane	1993

86	p-Bromodiphenyl ether	1990
87	Bromoform	1993
88	Bromomethane	1992
89	Bromotrichloromethane	1991
90	Bromoxynil	1988
91	Bromoxynil octanoate	1988
92	1,3-Butadiene	2002
93	n-Butanol	1991
94	Butyl benzyl phthalate	1989
95	Butylate	1994
96	t-Butylchloride	1990
97	Butylphthalyl butylglycolate (BPBG)	1987
98	Cacodylic acid	1992
99	Cadmium (water)	1991
100	Cadmium (food)	1991
101	Calcium cyanide	2010
102	Caprolactam	1994
103	Captafol	1987
104	Captan	1989
105	Carbaryl	1991
106	Carbofuran	1987
107	Carbon disulfide	1995
108	Carbon tetrachloride	2010
109	Carbonyl sulfide	1991
110	Carbosulfan	1987
111	Carboxin	1987
112	Cerium Oxide and Cerium Compounds	2009
113	Chloral hydrate	2000
114	Chloramben	1987
115	Chlordane (Technical)	1998
116	Chlordecone (Kepone)	2009
117	Chlorimuron-ethyl	1989
118	Chlorine	1994
119	Chlorine cyanide	1987
120	Chlorine dioxide	2000
121	Chlorite (sodium salt)	2000
122	1-Chloro-1,1-difluoroethane	1995
123	2-Chloroacetophenone	1991
124	p-Chloroaniline	1988
125	Chlorobenzene	1990
126	Chlorobenzilate	1989
127	1-Chlorobutane	1990
128	2-Chlorobutane	1990
129	Chlorocyclopentadiene	1990
130	Chlorodifluoromethane	1993
131	Chloroform	2001
132	Chloromethyl methyl ether (CMME)	1987

133	beta-Chloronaphthalene	1990
134	2-Chlorophenol	1988
135	p-Chlorophenyl methyl sulfide	1993
136	p-Chlorophenyl methyl sulfone	1993
137	p-Chlorophenyl methyl sulfoxide	1993
138	Chloroprene	2010
139	Chlorothalonil	1988
140	o-Chlorotoluene	1990
141	Chlorpropham	1988
142	Chlorpyrifos	1987
143	Chlorsulfuron	1987
144	Chromium(III), insoluble salts	1988
145	Chromium(VI) - oral	1998
146	Chromium(VI) - inhalation/acid mists and aerosols	1998
147	Chromium(VI) - inhalation/particulates	1998
148	Chrysene	1994
149	Coke oven emissions	1991
150	Copper	1988
151	Copper cyanide	1988
152	Creosote	1988
153	Crotonaldehyde	1991
154	Cumene	1997
155	Cyanazine	1993
156	Cyanide, free	2010
157	Cyanogen	2010
158	Cyanogen bromide	1988
159	Cyclohexane	2003
160	Cyclohexanone	1987
161	Cyclohexylamine	1988
162	Cyhalothrin/Karate	1988
163	Cypermethrin	1989
164	Cyromazine	1987
165	Dacthal	1994
166	Dalapon, sodium salt	1988
167	Danitol	1994
168	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)	2008
169	Demeton	1987
170	Di (2-ethylhexyl)phthalate (DEHP)	1988
171	Di(2-ethylhexyl)adipate	1992
172	2,4-Diaminotoluene	1991
173	Diazomethane	1991
174	Dibenz[a,h]anthracene	1994
175	Dibenzofuran	1990
176	1,2-Dibromo-3-chloropropane (DBCP)	1991
177	1,4-Dibromobenzene	1987
178	Dibromochloromethane	1992
179	Dibromodichloromethane	1991

180	p,p'-Dibromodiphenyl ether	1990
181	1,2-Dibromoethane	2004
182	Dibutyl phthalate	1990
183	Dicamba	1988
184	Dichloroacetic acid	2003
185	1,2-Dichlorobenzene	1990
186	1,3-Dichlorobenzene	1990
187	1,4-Dichlorobenzene	1994
188	3,3'-Dichlorobenzidine	1991
189	Dichlorodifluoromethane	1988
190	p,p'-Dichlorodiphenyl dichloroethane (DDD)	1988
191	p,p'-Dichlorodiphenyldichloroethylene (DDE)	1988
192	p,p'-Dichlorodiphenyltrichloroethane (DDT)	1988
193	1,1-Dichloroethane	1990
194	1,2-Dichloroethane	1991
195	cis-1,2-Dichloroethylene	2010
196	trans-1,2-Dichloroethylene	2010
197	1,1-Dichloroethylene (1,1-DCE)	2002
198	Dichloromethane	2011
199	2,4-Dichlorophenol	1988
200	4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	1987
201	2,4-Dichlorophenoxyacetic acid (2,4-D)	1987
202	1,2-Dichloropropane	1991
203	2,3-Dichloropropanol	1990
204	1,3-Dichloropropene	2000
205	Dichlorvos	1994
206	Dicofol	1992
207	Dieldrin	1991
208	Diesel engine exhaust	2003
209	Diethyl phthalate	1988
210	Diethyl sulfate	1991
211	Diethyl-p-nitrophenylphosphate	1992
212	Diethylene glycol dinitrate (DEGDN)	1993
213	Difenzoquat	1988
214	Diiflubenzuron	1987
215	1,1-Difluoroethane	1994
216	Diisopropyl methylphosphonate (DIMP)	1989
217	Dimethipin	1988
218	Dimethoate	1988
219	Dimethyl phthalate	1990
220	Dimethyl sulfate	1992
221	Dimethyl terephthalate (DMT)	1987
222	Dimethylamine	1991
223	N-N-Dimethylaniline	1987
224	3,3-Dimethylbenzidine	1991
225	N,N-Dimethylformamide	1990
226	2,4-Dimethylphenol	1990

227	2,6-Dimethylphenol	1988
228	3,4-Dimethylphenol	1988
229	4,6-Dinitro-o-cyclohexyl phenol	1988
230	m-Dinitrobenzene	1991
231	o-Dinitrobenzene	1992
232	2,4-Dinitrophenol	1991
233	2,4-Dinitrotoluene	1992
234	2,4-/2,6-Dinitrotoluene mixture	1990
235	Dinoseb	1989
236	1,4-Dioxane	2010
237	Diphenamid	1987
238	Diphenylamine	1987
239	1,2-Diphenylhydrazine	1991
240	Diquat	1987
241	Disulfoton	1987
242	1,4-Dithiane	1993
243	Diuron	1988
244	Dodine	1987
245	Endosulfan	1994
246	Endothall	1987
247	Endrin	1989
248	Epichlorohydrin	1992
249	1,2-Epoxybutane (EBU)	1992
250	Ethephon	1988
251	Ethion	1989
252	2-Ethoxyethanol	1991
253	Ethyl acetate	1987
254	Ethyl carbamate	1992
255	Ethyl chloride	1991
256	S-Ethyl dipropylthiocarbamate (EPTC)	1987
257	Ethyl ether	1990
258	Ethyl p-nitrophenyl phenylphosphorothioate (EPN)	1987
259	Ethylbenzene	1991
260	Ethylene diamine	1992
261	Ethylene glycol	1987
262	Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	2010
263	Ethylene thiourea (ETU)	1991
264	Ethyleneimine	1992
265	Ethylphthalyl ethylglycolate (EPEG)	1987
266	Express	1989
267	Fenamiphos	1987
268	Fluometuron	1988
269	Fluoranthene	1990
270	Fluorene	1990
271	Fluorine (soluble fluoride)	1987
272	Fluridone	1987
273	Flurprimidol	1989

274	Flutolanil	1989
275	Fluvalinate	1988
276	Folpet	1988
277	Fomesafen	1988
278	Fonofos	1987
279	Formaldehyde	1991
280	Formic acid	1990
281	Fosetyl-al	1988
282	Furan	1987
283	Furfural	1988
284	Furmecyclox	1988
285	Glufosinate-ammonium	1987
286	Glycidaldehyde	1991
287	Glyphosate	1989
288	Haloxypop-methyl	1990
289	Harmony	1988
290	Heptachlor	1991
291	Heptachlor epoxide	1991
292	n-Heptane	1993
293	Hexabromobenzene	1988
294	Hexabromodiphenyl ether	1990
295	2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)	2008
296	Hexachlorobenzene	1991
297	Hexachlorobutadiene	1993
298	alpha-Hexachlorocyclohexane (alpha-HCH)	1991
299	beta-Hexachlorocyclohexane (beta-HCH)	1991
300	delta-Hexachlorocyclohexane (delta-HCH)	1987
301	epsilon-Hexachlorocyclohexane (epsilon-HC)	1987
302	gamma-Hexachlorocyclohexane (gamma-HCH)	1988
303	technical Hexachlorocyclohexane (t-HCH)	1991
304	Hexachlorocyclopentadiene (HCCPD)	2001
305	Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD	1991
306	Hexachloroethane	2011
307	Hexachlorophene	1988
308	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1990
309	1,6-Hexamethylene diisocyanate	1994
310	n-Hexane	2005
311	2-Hexanone	2009
312	Hexazinone	1990
313	Hydrazine/Hydrazine sulfate	1991
314	Hydrogen Cyanide and Cyanide Salts	2010
315	Hydrogen chloride	1995
316	Hydrogen sulfide	2003
317	Hydroquinone	1990
318	Imazalil	1987
319	Imazaquin	1987
320	Indeno[1,2,3-cd]pyrene	1994

321	Iprodione	1988
322	Isobutyl alcohol	1987
323	Isophorone	1992
324	Isopropalin	1987
325	Isopropyl methyl phosphonic acid (IMPA)	1992
326	Isoxaben	1991
327	Lactofen	1988
328	Lead and compounds (inorganic)	2004
329	d-Limonene	1993
330	Linuron	1989
331	Londax	1988
332	Malathion	1987
333	Maleic anhydride	1988
334	Maleic hydrazide	1987
335	Maneb	1988
336	Manganese	1995
337	Mepiquat chloride	1988
338	Mercuric chloride (HgCl ₂)	1995
339	Mercury, elemental	1995
340	Merphos	1992
341	Merphos oxide	1992
342	Metalaxyl	1987
343	Methacrylonitrile	1988
344	Methamidophos	1987
345	Methanol	1988
346	Methidathion	1989
347	Methomyl	1987
348	Methoxychlor	1992
349	2-Methoxyethanol	1991
350	Methyl acrylate	1990
351	Methyl chloride	2001
352	Methyl chlorocarbonate	1989
353	Methyl ethyl ketone (MEK)	2003
354	Methyl iodide	1992
355	Methyl isobutyl ketone (MIBK)	2003
356	Methyl isocyanate	1991
357	Methyl methacrylate	1998
358	Methyl parathion	1987
359	Methyl tert-butyl ether (MTBE)	1993
360	4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	1988
361	2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPD)	1989
362	2-Methyl-4-chlorophenoxyacetic acid (MCPA)	1987
363	Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	1998
364	4,4'-Methylene bis(N,N'-dimethyl)aniline	1989
365	Methylmercury (MeHg)	2001
366	2-Methylnaphthalene	2003
367	2-Methylphenol	1992

368	3-Methylphenol	1992
369	4-Methylphenol	1992
370	Metolachlor	1990
371	Metribuzin	1993
372	Mirex	1992
373	Molinate	1988
374	Molybdenum	1992
375	Monochloramine	1994
376	Naled	1987
377	Naphthalene	1998
378	Napropamide	1989
379	Nickel carbonyl	1987
380	Nickel refinery dust	1991
381	Nickel subsulfide	1991
382	Nickel, soluble salts	1991
383	Nitrapyrin	1992
384	Nitrate	1991
385	Nitric oxide	1994
386	Nitrite	1987
387	Nitrobenzene	2009
388	Nitrogen dioxide	1994
389	Nitroguanidine	1990
390	p-Nitrophenol	1991
391	2-Nitropropane	1991
392	N-Nitroso-N-methylethylamine	1988
393	N-Nitroso-di-n-butylamine	1991
394	N-Nitrosodi-N-propylamine	1987
395	N-Nitrosodiethanolamine	1987
396	N-Nitrosodiethylamine	1991
397	N-Nitrosodimethylamine	1991
398	N-Nitrosodiphenylamine	1987
399	N-Nitrosopyrrolidine	1991
400	Nonabromodiphenyl ether	1990
401	Norflurazon	1987
402	NuStar	1988
403	Octabromodiphenyl ether	1990
404	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1989
405	Oryzalin	1989
406	Oxadiazon	1987
407	Oxamyl	1987
408	Oxyfluorfen	1987
409	Paclobutrazol	1987
410	Paraquat	1988
411	Parathion	1988
412	Pendimethalin	1988
413	Pentabromodiphenyl ether	1990
414	2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)	2008

415	Pentachlorobenzene	1992
416	Pentachlorocyclopentadiene	1990
417	Pentachloronitrobenzene (PCNB)	1987
418	Pentachlorophenol	2010
419	Pentafluoroethane	1993
420	Perchlorate (ClO ₄) and Perchlorate Salts	2005
421	Permethrin	1987
422	Phenanthrene	1990
423	Phenmedipham	1990
424	Phenol	2002
425	m-Phenylenediamine	1987
426	Phenylmercuric acetate	1987
427	Phosalone	1988
428	Phosgene	2006
429	Phosmet	1987
430	Phosphine	1995
431	Phosphoric acid	1995
432	Phthalic anhydride	1988
433	Picloram	1987
434	Pirimiphos-methyl	1987
435	Polychlorinated biphenyls (PCBs)	1996
436	Potassium cyanide	2010
437	Potassium silver cyanide	2010
438	Prochloraz	1989
439	Prometon	1988
440	Prometryn	1987
441	Pronamide	1987
442	Propachlor	1987
443	Propanil	1988
444	Propargite (systemic effects)	1990
445	Propargite (maternal and feto- toxicity)	1990
446	Propargyl alcohol	1990
447	Propazine	1987
448	Propham	1987
449	Propiconazole	1988
450	beta-Propiolactone	1991
451	Propionaldehyde	2008
452	Propylene glycol	1991
453	Propylene glycol monoethyl ether	1991
454	Propylene glycol monomethyl ether (PGME)	1991
455	Propylene oxide	1991
456	Propyleneimine	1992
457	Pursuit	1990
458	Pydrin	1987
459	Pyrene	1991
460	Pyridine	1987
461	Quinalphos	1987

462	Quinoline	2001
463	Quinone	1990
464	Radium 226,228	1989
465	Radon 222	1989
466	Refractory ceramic fibers	1992
467	Resmethrin	1988
468	Rotenone	1988
469	Savey	1988
470	Selenious acid	1991
471	Selenium and Compounds	1991
472	Selenium sulfide	1991
473	Selenourea	1991
474	Sethoxydim	1989
475	Silver	1991
476	Silver cyanide	1987
477	Simazine	1993
478	Sodium azide	1987
479	Sodium cyanide	2010
480	Sodium diethyldithiocarbamate	1988
481	Sodium fluoroacetate	1991
482	Strontium	1992
483	Strychnine	1987
484	Styrene	1992
485	Systhane	1988
486	Tebuthiuron	1988
487	Terbacil	1987
488	Terbutryn	1988
489	Tetrabromodiphenyl ether	1990
490	2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)	2008
491	1,2,4,5-Tetrachlorobenzene	1988
492	Tetrachlorocyclopentadiene	1990
493	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2012
494	1,1,1,2-Tetrachloroethane	1991
495	1,1,2,2-Tetrachloroethane (subchronic)	2010
496	1,1,2,2-Tetrachloroethane (chronic)	2010
497	Tetrachloroethylene	2012
498	2,3,4,6-Tetrachlorophenol	1988
499	Tetrachlorovinphos	1987
500	Tetraethyl lead	1987
501	Tetraethyldithiopyrophosphate	1988
502	Tetrafluoroethane	1995
503	Tetrahydrofuran	2012
504	Thallium (I), soluble salts	2009
505	Thallium acetate	2009
506	Thallium carbonate	2009
507	Thallium chloride	2009
508	Thallium nitrate	2009

509	Thallium oxide	2009
510	Thallium selenite	2009
511	Thallium(I) sulfate	2009
512	Thiobencarb	1987
513	Thiophanate-methyl	1988
514	Thiram	1987
515	Toluene	2005
516	2,4-/2,6-Toluene diisocyanate mixture (TDI)	1995
517	Toxaphene	1991
518	Tralomethrin	1989
519	Triallate	1990
520	Triasulfuron	1991
521	1,2,4-Tribromobenzene	1987
522	Tribromochloromethane	1991
523	Tribromodiphenyl ether	1990
524	Tributyltin oxide (TBTO)	1997
525	1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	1988
526	Trichloroacetic acid	2011
527	1,2,4-Trichlorobenzene	1992
528	Trichlorocyclopentadiene	1990
529	1,1,1-Trichloroethane (Acute)	2007
530	1,1,1-Trichloroethane (Short-term)	2007
531	1,1,1-Trichloroethane (Subchronic)	2007
532	1,1,1-Trichloroethane (Chronic)	2007
533	1,1,2-Trichloroethane	1991
534	Trichloroethylene (adult immunological effects)	2011
535	Trichloroethylene (developmental immunotoxicity)	2011
536	Trichloroethylene (heart malformations)	2011
537	Trichlorofluoromethane	1987
538	2,4,5-Trichlorophenol	1991
539	2,4,6-Trichlorophenol	1991
540	2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	1988
541	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	1988
542	1,1,2-Trichloropropane	1998
543	1,2,3-Trichloropropane	2009
544	Tricresol	1992
545	Tridiphan	1987
546	Triethylamine	1991
547	Triethylene glycol monobutyl ether	1994
548	Triethylene glycol monoethyl ether	1994
549	Trifluralin	1989
550	2,2,4-Trimethylpentane	2007
551	1,3,5-Trinitrobenzene	1997
552	2,4,6-Trinitrotoluene (TNT)	1989
553	Uranium, natural	1989
554	Uranium, soluble salts	1989
555	Urea	2011

556	Vanadium pentoxide	1988
557	Vernam	1987
558	Vinclozolin	1987
559	Vinyl acetate	1990
560	Vinyl bromide	1994
561	Vinyl chloride	2000
562	Warfarin	1987
563	White phosphorus	1990
564	Xylenes	2003
565	Zinc and Compounds	2005
566	Zinc cyanide	1987
567	Zinc phosphide	1988
568	Zineb	1987

RfD?	Intraspecies			Interspecies			L to N				
	Value	Disc'd	Note	Value	Disc'd	Note	Value	Disc'd	Note	Value	Disc'd
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		1	Y		3	Y		1	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		3	Y		1	Y		3	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	Y		1	Y
Y	10	Y		3	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	N/A	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	?	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	C	Y
Y	10	Y		10	Y		10	Y		1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N

N											
Y	3	Y		3	Y		1	N	N as POD	3	Y
N											
Y	10	Y		3	Y		3	Y		3	Y
Y	C	Y		1	N	Human exposure	1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	N
N											
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
N											
Y	10	Y		1	N	Human exposure	10	Y		?	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		10	Y		1	N	N as POD	1	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		1	N	Human exposure	?	Y	Other UF	3	Y
Y	10	Y		10	Y		10	Y		1	N
N											
N											
N											
N											
Y	1	Y		1	N	Human exposure	1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
Y	10	Y		10	Y		?	N	LtoN v SubC	10?	Y
Y	10.4	Y		6.3	Y		N/A	N	BMR post-03	N/A	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		N/A	Y	BMR	N/A	N
Y	10	Y		10	Y		N/A	Y	BMR	3	Y
N											
Y	10	Y		10	Y		C	Y		1	N

N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		1	N	Human exposure	1	N	N as POD	1	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		10	Y		N/A	Y	BMR	3	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		1	N	Human exposure	10	Y		1	Y
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	Y
Y	10	Y		10	Y		1	N	N as POD	N/A	Y
N											
N											
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	N/A	N
N											
N											
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
N											

Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	3	Y
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
Y	10	Y		10	Y		1	N	N as POD	3	Y
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	Y		3	Y
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		C	Y		C	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											

N											
Y	10	Y		10	Y		10	Y		1	Y
Y	10	Y		10	Y		1	N	N as POD	10?	Y
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		3	Y		10	Y		3	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	Y
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	10	Y
Y	10	Y		10	Y		N/A	Y	BMR	10	Y
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	3	Y		3	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	Y
N											
Y	10	Y		10	Y		1	N	N as POD	?	Y
Y	10	Y		10	Y		?	N	BMR pre-03	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		10	Y		1	N
N											
Y	10	Y		10	Y		10	Y		10	Y
N											
N											
Y	10	Y		10	Y		1	N	N as POD	?	Y

Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		1	N	Human exposure	10	Y		10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		1	N	Human exposure	10	Y		10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	Y		1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		10	Y		C	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		1	N	Human exposure	10	Y		?	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	1	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		1	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		10	Y		1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	C	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	1	Y		1	Y		1	N	N as POD	N/A	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N

Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		3	Y		10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	N/A	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		1	N
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	Y		3	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		?	N	BMR pre-03	3	Y
N											
Y	10	Y		10	Y		N/A	Y	BMR	3	Y
Y	10	Y		10	Y		10	Y		3	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		N/A	Y	BMR	10	Y
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											

Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		1	N
N											
N											
Y	10	Y		10	Y		3	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	?	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	1	N	cross-sectional	1	N	Human exposure	1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	C	Y
Y	C	Y		C	Y		10	Y		10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	N/A	N
N											
N											
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	N/A	Y
N											
N											
N											
Y	10	Y		3	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	C	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		1	Y		?	N	BMR pre-03	N/A	N
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y

Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	?	N
Y	3	Y		1	N	Human exposure	10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	1	Y		1	N	Human exposure	1	N	N as POD	N/A	N
N											
Y	1	Y		1	N	Human exposure	1	N	N as POD	N/A	N
Y	10	Y		10	Y		N/A	Y	BMR	3	Y
N											
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
N											
N											
N											
N											
N											
N											
N											
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		N/A	Y	BMR	3	Y

Y	10	Y		10	Y		10	Y		10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		3	Y		1	Y
N											
Y	10	Y		1	Y		1	Y		1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		N/A	Y	BMR	N/A	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	?	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	?	N
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
N											
N											
N											
N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N

N												
N												
N												
N												
N												
Y	10	Y		10	Y		10	Y		N/A	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	3	Y		1	N	Human exposure	1	N	N as POD	1	N	
Y	3	Y		1	N	Human exposure	1	N	N as POD	1	N	
N												
N												
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	3	Y		1	N	Human exposure	?	N	LOAEL	1	Y	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
N												
Y	10	Y		10	Y		1	N	N as POD	10	Y	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
Y	3	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		10	Y		10	Y	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		1	N	N as POD	1	N	
N												
Y	10	Y		10	Y		N/A	Y	BMR	3	Y	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
N												
Y	3	Y		1	Y		10	Y		1	Y	
Y	10	Y		10	Y		10	Y		1	N	
Y	10	Y		10	Y		N/A	Y	BMR	N/A	N	
Y	10	Y		10	Y		N/A	Y	BMR	3	Y	
Y	10	Y		1	Y		10	Y		1	Y	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
Y	10	Y		10	Y		1	N	N as POD	1	N	
Y	10	Y		10	Y		10	Y		10	Y	
Y	10	Y		10	Y		1	N	N as POD	10	Y	
N												
Y	10	Y		10	Y		N/A	Y	BMR	N/A	Y	
N												
N												
N												
N												
N												

N											
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		N/A	Y	BMR	10	Y
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
Y	10	Y		10	Y		?	N	BMR pre-03	1	N
Y	10	Y		1	N	Human exposure	1	N	N as POD	1	N
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
N											
N											
Y	10	Y		10	Y		N/A	Y	BMR	N/A	Y
Y	10	Y		10	Y		N/A	Y	BMR	3	Y
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	3	Y		3	Y		10	Y		1	Y
Y	10	Y		10	Y		10	Y		N/A	Y
Y	3	Y		3	Y		N/A	Y	BMR	N/A	Y
Y	10	Y		10	Y		10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		N/A	Y	BMR	1	Y
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		10	Y
N											
Y	10	Y		10	Y		10	Y		1	Y
N											

Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	N	N as POD	10	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
N											
N											
Y	10	Y		3	Y		1	N	N as POD	1	N
Y	10	Y		1	N	Human exposure	10	Y		1	N
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		1	Y		1	Y
Y	3	Y		1	Y		1	Y		1	Y
Y	10	Y		10	Y		1	N	N as POD	1	N
Y	10	Y		10	Y		10	Y		10	Y
Y	10	Y		10	Y		5	Y		1	N

Study
90-day rat feeding study
1-yr dog feeding study
2-gen rat repro study
rat chronic oral study
rat chronic drinking water study
2-gen rat repro study
1-yr dog feeding study
3-gen rat repro study
acute human oral poisoning
1-yr dog feeding study
rat chronic feeding study
2-yr rat study
rat chronic oral study
2-yr dog feeding study
90-day rat feeding study
rat chronic oral bioassay
1-yr dog feeding study

Human chronic study
2-yr rat feeding study
2-gen rat repro study
2-yr rat feeding study
2-gen rat repro study
2-yr mouse drinking water study
Single-dose human study
2-yr rat dietary study
2-yr rat dietary study
dog chronic oral bioassay
3-gen rat repro study
1-yr dog feeding study
mouse chron oral bioassay
Human daily intake
dog chronic feeding study
3-gen rat repro study
1-yr dog feeding study
rat chronic oral study
2-yr mouse dietary study
rat chronic oral bioassay
rat dietary gestational exp
rat chronic feeding study
90-day mouse gavage study
mouse chronic bioassay

2-yr rat feeding study
2-yr rat feeding study
1-yr dog feeding study
rat chronic oral bioassay
human chronic studies
human chronic studies
3-gen rat repro study
1-yr dog feeding study
1- and 3-gen rat repro studies
rat chronic feeding study
1-yr dog feeding study
rabbit inhal teratogenic study
2-yr rat feeding study
2-yr rat feeding study
Human clinical dose
18-mon mouse oncogen study
2-yr mouse oral study
2-yr rat feeding study
1-yr dog feeding study
rat chronic drinking water study
rat chronic oral study
2-gen rat drinking water study
2-gen rat drinking water study
rat chronic oral bioassay
rabbit teratology study
dog chronic oral bioassay

rat chronic oral study
rat subchronic to chronic study
rabbit developmental study
2-yr rat oral study
rat chronic oral study
27-wk rat feeding study
rat chronic drinking water study
2-yr rat drinking water bioassay
rat subchronic to chronic study
interim results of 2-yr rat oral bioassay
rat oral subchronic study
rat chronic feeding study
1-yr dog feeding study
2-yr rat feeding study
2-yr rat feeding study
1-yr dog feeding study
2-yr rat feeding study
2-yr rat feeding study
rat chronic dietary study
mouse subchronic oral study

2-yr dog feeding study
3-gen rat repro study
rat chronic oral study
2-yr dog feeding study
2-yr dog feeding study
rat chronic dietary study
2-yr rat dietary study
2-yr dog feeding study
1-yr dog feeding study
2-yr rat feeding study
2-yr dog feeding study
dog chronic oral bioassay
16-day human study
85-day human oral study
2-gen rat repro study
rat chronic feeding study
rat and mouse chronic inhalation study
2-yr rat feeding study
rat chronic oral bioassay
1-yr dog feeding study
2-yr dog feeding study
2-yr rat feeding study
epidemiologic study in children
2-yr rat feeding study
2-gen rat repro study

3-gen rat repro & terato studies
2-yr rat feeding/onco study
dog chronic oral tox study
2-yr dog feeding study
2-yr rat oral bioassay
2-yr dog feeding study
3-gen rat repro study
3-gen rat repro study
2-yr rat feeding study
2-yr rat feeding study
60-wk dog feeding study
rat chronic feeding study
2-yr rat feeding study
13-mon rat drinking water study
2-yr rat feeding study
2-yr dog feeding study
1-yr dog feeding study

1-yr dog feeding study
2-yr rat feeding study
1.5-yr mouse oncogenic study
2-yr dog feeding study
1-yr dog feeding study
human subchron feeding study
rat chronic oral study
2-yr rat feeding study
human chronic ingestion data
6-mon dog feeding study
1-yr dog feeding study
2-yr dog feeding study
2-yr dog feeding study
rabbit teratology study
multi-gen rat repro/devel study
2-yr rat drinking water study
2-yr rat feeding study
1-yr dog feeding study
human develop tox epi study
81-wk mouse dietary study

2-yr rat feeding study
2-yr dog feeding study
2-yr rat dietary study
rat fertility study
human lifetime dietary study
rat chronic oral study
2-yr rat dietary study
3-gen rat repro study
rat chronic oral study
human epidem surveys
human infant chronic exposure
6-mon dog feeding study
1-yr dog feeding study
1-yr dog feeding study
2-yr rat feeding study
2-yr rat feeding/onco study
2-mon mouse feeding study
1-yr dog feeding study
2-yr dog feeding study

2-yr dog feeding study
1-yr dog feeding study
14-day human oral study
2-yr rat feeding study
2-yr rat feeding study
rat developmental study
rat chronic oral study
2-yr rat feeding study
rat chronic oral study
mouse chron oral study
6-mon dog feeding study
56-day human feeding study
2-yr dog feeding study
106-wk dog feeding study
2-yr dog feeding study
2-yr rat feeding study
2-yr dog feeding study
rabbit develop tox study
2-yr rat feeding study
1-yr dog feeding study
1-yr dog feeding study
13-wk rat feeding study
2-yr dog feeding study

3-gen rat repro study
2-gen rat repro study
1-yr dog feeding study
lifetime human exposure
lifetime human exposure
1-yr dog feeding study
2 to 9-yr human i.v. study
rat chronic oral study
2-yr rat feeding study
20-d, 9-wk & 3-yr rat oral studies
2-yr rat feeding study
2-gen rat repro study
2-yr dog feeding study
2-yr rat feeding study
human epi cohort study
rat chronic oral study
rat subchronic dietary study
human occ exposure study
2-yr dog feeding study
2-gen rat repro study

2-yr rat feeding study
2-yr rat feeding
2-yr rat feeding
2-yr rat feeding
2-yr dog feeding study
2-yr mouse feeding
18-month rat feeding
Human worker study/unknown duration
60-wk mouse drinking water study
90-day mouse dietary study
30-wk mouse drinking water study
8-wk mouse drinking water study
rat maternal drinking water study
78-week rat/mice bioassay
2-yr dog feeding study
2-yr rat chronic feeding
2-yr rat oral bioassay
2-gen rat repro study
1-yr dog feeding study
2-yr rat chronic feeding
30-day rabbit oral bioassay

rat chronic dietary study
6-mon dog feeding study
rat chronic feeding study
Human clinical studies
1-gen rat repro study
rat chronic oral study
human clinical studies
2-yr rat feeding study
2-yr rat feeding study

Subchronic to Chronic
Endpt
Inhibition of brain ChE
Salivation, increased ALT and ornithine carbamyl transferase significant increases in triglyceride and decreased blood glu
Mortality and kidney lesions
Decreased survival
Degenerative nerve changes
Reduced pup weight
Hemosiderosis, hemolytic anemia
No adverse effects (maternal and fetal toxicity evaluated)
Sweating as clinical sign of AChE inhibition
Brain ChE inhibition in females
Liver toxicity
Decreased body weight
Body weight and clinical parameters
Increased mean blood sugar concentration; slight hypothermia
Decrease in body weight
Longevity, blood glucose, and cholesterol
Liver effects; organ weight changes

Hyperpigmentation, keratosis and possible vascular complications
Liver cell enlargement
Lower ovarian weight, lower liver/body weight
Decreased body weight gain
Increased retinal folds in weanlings, decreased viability and lactation indices, decreased pup body weight, increase of de
Nephropathy
Mild cholinergic symptoms and RBD ChE inhibition
Decreased body weight gain, erythrocyte count and hemoglobin level
Decreased body weights in males, inflammatory foci in kidneys of females
Depressed erythrocyte counts
Decreased pup weanling weights
Blood loss into the gastrointestinal tract; coagulation defect in male and female dogs
Brain cell vacuolization; liver cell alterations in females
No adverse effects observed
Small intestinal lesions
Decreased pup survival
Tremors
Kidney damage
Decrease in hemoglobin and possible erythrocyte destruction
Reduced mean body weight
Decreased fetal weight (developmental)
Renal effects: urothelial hyperplasia
Hepatocellular cytomegaly in male B6C3F1 mice
Renal cytomegaly

No adverse effects
No effects
Increased relative liver weight in male dogs
No adverse effect
Significant proteinuria
Significant proteinuria
Reduced offspring body weight
Kidney and bladder toxicity
Decreased mean body weights
Kidney and liver toxicity
RBC and plasma cholinesterase inhibition, and testicular and uterine effects
Fetal toxicity/ malformations
Decreased body weight
Reduced weight gain, organ weight changes, increased mortality
CNS depression and GI irritation in humans
Hepatocyte degeneration
Hepatic necrosis
Renal lesions (glomerulosclerosis) in female Wistar rats
Increase in WBC, decreased in RBC in females, increase in alkaline phosphatase in males
No observed adverse effects
No adverse effects
Neurodevelopmental effects
Neurodevelopmental effects
Nonneoplastic lesions of splenic capsule
Decreased stool quantity, food consumption and body weight gains; hyperirritability (maternal effects)
Moderate/marked fatty cyst formation in the liver and elevated SGPT

Renal tubular epithelial vacuolation
Kidney, spleen, liver, and bone marrow toxicity
Decreased body weight
No effects observed
No adverse effects
Body weight depression
Testicular damage
Reduced body weight gain preceding pregnancy; reduced body weight gain in offspring during weaning period
G.I. tract disturbances
Hematologic effects
Effects on the lungs, liver, kidney, thyroid and thyroid hormones in males and females and eyes of females
Increased kidney body weight ratio
Tremors
ChE inhibition, optic nerve degeneration
Changes in body weight and liver weight increased liver weight of male and female parents; reduced ossification and slight

Testicular atrophy, liver peliosis, and adrenal cortical degeneration
Increased mortality
Maternal and fetal toxicity
No adverse effects observed
Reduced body weight
Liver lesions
Liver toxicity (fatty change)
Liver toxicity
Decreased delayed hypersensitivity response
Hematologic, hepatic and renal toxicity
Myocardial degeneration, hepatotoxicity and nephrotoxicity
Chronic irritation
Plasma and RBC ChE inhibition in males and females; brain ChE inhibition in males
Liver lesions
Decreased body weight
Methemoglobin and sulfhemoglobin formation
Increased absolute and relative liver weight
Brain ChE inhibition
Chronic kidney inflammation
Clinical signs (lethargy, prostration, and ataxia) and hematological changes

Neurotoxicity, Heinz bodies and biliary tract hyperplasia
Decreased fetal weight
Liver and kidney toxicity
Liver toxicity
Decreased body weight gain, and increased liver and kidney weights
Minimal lens opacity and cataracts
ChE inhibition, optic nerve degeneration
Abnormal pigments in blood
Thyroid toxicity
Reduced body weight gain in males and females; increased incidence of marked progressive glomerulonephrosis and blo
Increased absolute and relative weights of stomach and small intestine
Mild histological lesions in liver, occasional convulsions
Plasma ChE inhibition
Plasma cholinesterase inhibition
Degenerative cardiomyopathy
Kidney toxicity
Hemosiderin deposition in the liver
Increased incidence of thyroid hyperplasia
Kidney damage and reduced lifespan
Elevated serum bilirubin and AST levels, increased urinary volume
ChE inhibition
No adverse effects
Objectionable dental fluorosis, a cosmetic effect
Glomerulonephritis, atrophic testes, eye keratitis; decreased body weight and organ weights
Increased incidence of hepatocellular changes including fatty change and vacuolation (M); increased susceptibility to stre

Increased RBC Heinz bodies; decreased prostate weight
Increased BUN; decreased serum AP and AST; decreased food consumption efficiency; increased heart/body weight
Increased absolute and relative liver weight; hepatocytomegaly in males
Abnormal blood pigment
Liver effects
RBC ChE depression
No adverse effects
Renal dysfunction
CNS effects
Increased serum alkaline phosphatase levels and increased liver-to-brain weight ratio
ChE inhibition
Liver toxicity
Kidney and spleen pathology
Excessive loss of litters
Decreased pup body weight
None
RBC, ChE inhibition; reduced hemoglobin, hematocrit and RBCs
Kidney and liver toxicity
Developmental neuropsychological impairment
Pulmonary alveolar proteinosis

Liver toxicity
Hepatotoxicity
Radioactive iodide uptake inhibition (RAIU) in the thyroid
Increased liver weights
No adverse effects
Decreased maternal weight gain
Renal damage
Reduced body weight (males), liver cell vacuolation, cholinesterase inhibition
Body weight and clinical parameters
Lung and kidney histopathology
Increased liver weights
Transient plasma ChE depression
Increase in SAP and liver weights, liver histopathology
Liver and kidney degeneration and bone marrow atrophy
No effects
Increased relative spleen weight in females
No adverse effects observed at the HDT
Reduced body weight gain; increased resorption, reduced body weight, delayed ossification (maternal and fetal)
Decrease in body weight
Gastric mucosal irritation
Decreased packed cell volume, hemoglobin, erythrocytes in females
Neurological dysfunction
No adverse effects reported

Reproductive toxicity
Reduced pup weight
Hypertrophy of adrenal cortex (both sexes); hematologic effects (males)
Clinical selenosis
Clinical selenosis
Mild anemia in males
Argyria
No observed effects
Reduction in weight gains; hematological changes in females
Rachitic bone
Testicular atrophy
Depressed body weight gain in F1 females
Increase in thyroid/body weight ratio; slight increase in liver weights; elevated alkaline phosphatase
Hematologic effects in females
#N/A
Mineralization of the kidneys in males, hepatic clear cell change in females
Increased relative liver weight in rats
Neurotoxicity (reaction time, cognitive effects)
Reduced body weight gain, increased liver and kidney weights, and RBC ChE inhibition
#N/A

Decrease in body weight, increase in BUN
Decreased body weight, decreased spermatogenesis, and histological evidence of hyperthyroidism
Neurotoxicity
Decreased body weight gain in males; increased food and water consumption in males and females
Increased hemosiderin deposition, serum alkaline phosphatase, and liver weight in females
Centrilobular hepatocytomegaly in males
Immunosuppression
Psychomotor impairment
Hepatocellular necrosis
Reduced body weight
Decreased thymus weight in female B6C3F1 mice (adult immunological effects)
Decreased plaque-forming cell (PFC) response, increased delayed-type hypersensitivity in B6C3F1 mice (development Im
Increased fetal cardiac malformations in Sprague-Dawley rats (heart malformations)
Survival and histopathology
Histopathological changes in liver
Increased urinary coproporphyrins
Increased absolute liver weight in male rats
Decreased fertility index and depressed body weight of dams
Increased liver weights; increase in methemoglobin
Methemoglobinemia and spleen-erythroid cell hyperplasia
Initial body weight loss; moderate nephrotoxicity

Decreased hair cystine
Organ weight changes
Liver cell polymorphism
Increased prothrombin time
Parturition mortality; forelimb hair loss
Decreased body weight, increased mortality
Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers
No observed effects
Thyroid hyperplasia

Note	Database			Note	Combined	Other
	Value	Disc'd	DB conf			
	3	Y			None	None
Dur not factor	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	10	Y				None
	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	Y	High		None	None
Chron study/CE	1	Y	Med/High		None	None
Lifestage effect	1	Y	High		None	None
Chron study/CE	1	N	High	high DB conf	None	None
Lifestage effect	?	N	Medium	med DB conf	None	None
Dur not factor	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Subchron	10	Y			None	None
	C	Y			30 (Subch, DB)	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None

	3	Y			None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	C	Y			3 (Intra, DB)	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	3
Chron study/CE	3	Y			None	None
Subchron	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	1	Y	Medium		None	None
	?	N	Low	low DB conf	None	None
	3	Y			None	3
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	10	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
SubC v LtoN	1	N	High	high DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
<Chron RfV	10	Y			None	None
	10	Y			None	None
Chron study/CE	C	Y			10 (LtN, DB)	None

	?	N	Medium	med DB conf	None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	3	Y			None	None
	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Lifestage effect	?	N	Medium	med DB conf	None	None
	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	Y	High		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	Y	Medium		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
	?	N	Medium	med DB conf	None	None
Lifestage effect	3	Y			None	None
Chron study/CE	1	Y	Medium		None	None

	3	Y			None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
	?	N	Medium	med DB conf	None	None
	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Dur not factor	1	Y	High		None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
	1	Y	Medium		None	None
Chron study/CE	?	N	Low	low DB conf	None	None
	?	N	Medium	med DB conf	10 (LtN, Subch)	None
Chron study/CE	3	Y			None	None
	?	N	Low	low DB conf	None	None
	?	N	Medium	med DB conf	None	None

Chron study/CE	10	Y			None	None
Comb w DB	?	Y	Low	Comb v Sep	?	None
Lifestage effect	1	N	High	high DB conf	None	None
	3	Y			None	None
Chron study/CE	10	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Dur not factor	?	N	Medium	med DB conf	None	None
	3	Y			None	None
	3	Y			None	None
Chron study/CE	1	Y	Medium		None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
Dur not factor	?	N	Medium	med DB conf	None	None
Comb w DB	30?	Y	low	Comb v Sep	?	None
Chron study/CE	1	Y	High		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
Comb w DB	30?	Y	low	Comb v Sep	?	None

	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
	3	Y			None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	C	Y			10 (Subch, DB)	None
Chron study/CE	3	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Subchron	?	N	Medium	med DB conf	None	None
Dur not factor	?	N	Medium	med DB conf	None	10
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	3	Y			None	None
	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	Y	Medium/High		None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	10	Y			None	None
	C	Y			30 (Subch, DB)	None
	3	Y			None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None

Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE						
Chron study/CE						
Chron study/CE						
Chron study/CE						
Chron study/CE						
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE						
Chron study/CE	3	Y			None	None
Chron study/CE						
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE						
Chron study/CE						
Chron study/CE	10	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE						
Chron study/CE	3	Y			None	None
Chron study/CE						
Chron study/CE						
Chron study/CE						
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf		
Chron study/CE						

Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Subchron	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	C	Y			10 (Subch, DB)	None
	1	N	High	high DB conf	10 (Intra, Inter)	None
	3	Y			None	None
	3	Y			None	None
Dur not factor	1	N	High	high DB conf	None	None
	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Lifestage effect	10	Y			None	None
Lifestage effect	10	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	C	Y			10 (Subch, DB)	None
	3	Y			None	None
Chron study/CE	3	Y			None	None
Lifestage effect	1	Y	High		None	None
Chron study/CE	10	Y			None	None
	?	N	Medium	med DB conf	None	None

	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
Unk duration	1	Y	Low		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	Y	Medium		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	3	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	3	Y			None	None
Lifestage effect	1	N	High	high DB conf	None	None
Lifestage effect	1	N	High	high DB conf	None	None
	3	Y			None	None
	3	Y			None	None
Dur not factor	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
	?	N	Low	low DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	None
	?	N	Low	low DB conf	None	None
	10	Y			None	None

	?	N	Low	low DB conf	None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	Y	High		None	None
Dur not factor	1	Y	Medium		None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Lifestage effect	3	Y			None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Subchron	?	N	Medium	med DB conf	None	None
Subchron	1	N	High	high DB conf	None	2.5
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	10	Y			None	None
Lifestage effect	?	N	Medium	med DB conf	None	None
	3	Y			None	None
Chron study/CE	3	Y			None	None
	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Dur not factor	1	N	High	high DB conf	None	None
	3	Y			None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None

Lifestage effect	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Medium	med DB conf	None	None
	?	N	Medium	med DB conf	None	None
	3	Y			None	None
Chron study/CE	10	Y			None	None
	?	N	Low	low DB conf	None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	10	Y			None	None
	?	N	Low	low DB conf	None	None
Dur not factor	1	Y	High		None	None
Chron study/CE	3	Y			None	None
<Chron RfV	3	Y			None	None
	3	Y			None	None
Chron study/CE	10	Y			None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Lifestage effect	10	Y			None	None

Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	10	Y			None	None
	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
	?	N	Medium	med DB conf	None	None
<Chron RfV	3	Y			None	None
	3	Y			None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	1	Y	High		None	None
Lifestage effect	1	Y	High		None	None
Lifestage effect	1	Y	High		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
Chron study/CE	3	Y			None	None
	3	Y			None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Medium	med DB conf	None	None
Dur not factor	?	N	Medium	med DB conf	None	None

Chron study/CE	?	N	Low	low DB conf	None	None
	?	N	Low/Medium	lo/md DB conf	None	None
Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	1	Y	Medium/High		None	None
Chron study/CE	?	N	Low	low DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	10	Y			None	None
Chron study/CE	1	Y	High		None	None
Chron study/CE	?	N	Medium	med DB conf	None	None
	?	N	Low	low DB conf	None	None
Chron study/CE	?	N	Medium	med DB conf	None	None

Reference Concentration (RfC)			
Substance	RfC?	Intraspeci	
		Value	Disc'd
Acenaphthene	N	10	
Acenaphthylene	N	10	
Acephate	N	10	
Acetaldehyde	Y	10	Y
Acetochlor	N	10	
Acetone	N	10	
Acetonitrile	Y	10	Y
Acetophenone	N	10	
Acetyl chloride	N	10	
Acifluorfen, sodium	N	10	
Acrolein	Y	10	Y
Acrylamide	Y	10	Y
Acrylic acid	Y	10	Y
Acrylonitrile	Y	10	Y
Adiponitrile	N	10	
Alachlor	N	10	
Alar	N	10	
Aldicarb	N	10	
Aldicarb sulfone	N	10	
Aldrin	N	10	
Ally	N	10	
Allyl alcohol	N	10	
Allyl chloride	Y	10	Y
Aluminum phosphide	N	10	
Amdro	N	10	
Ametryn	N	10	
4-Aminopyridine	N	10	
Amitraz	N	10	
Ammonia	Y	10	Y
Ammonium acetate	N	10	
Ammonium methacrylate	N	10	
Ammonium sulfamate	N	10	
Aniline	Y	10	Y
ortho-Anisidine	N	10	
Anthracene	N	10	
Antimony	N	10	
Antimony trioxide	Y	10	Y
Apollo	N	10	

Aramite	N		
Aroclor 1016	N		
Aroclor 1248	N		
Aroclor 1254	N		
Arsenic, inorganic	N		
Arsine	Y	10	Y
Asbestos	N		
Assure	N		
Asulam	N		
Atrazine	N		
Avermectin B1	N		
Azobenzene	N		
Barium and Compounds	N		
Barium cyanide	N		
Baygon	N		
Bayleton	N		
Baythroid	N		
Benefin	N		
Benomyl	N		
Bentazon (Basagran)	N		
Benz[a]anthracene	N		
Benzaldehyde	N		
Benzene	Y	10	Y
Benzidine	N		
Benzo[a]pyrene (BaP)	N		
Benzo[b]fluoranthene	N		
Benzo[g,h,i]perylene	N		
Benzo[k]fluoranthene	N		
Benzoic acid	N		
Benzotrichloride	N		
Benzyl chloride	N		
Beryllium and compounds	Y	1	Y
Bidrin	N		
Biphenthrin	N		
1,1-Biphenyl	N		
Bis(2-chloro-1-methylethyl) ether	N		
Bis(2-chloroethoxy)methane	N		
Bis(chloroethyl)ether (BCEE)	N		
Bis(chloromethyl)ether (BCME)	N		
Bisphenol A.	N		
Boron and Compounds	N		
Bromate	N		
Brominated dibenzofurans	N		
Bromobenzene (subchronic)	Y	10	Y
Bromobenzene (chronic)	Y	10	Y
Bromochloromethane	N		
Bromodichloromethane	N		

p-Bromodiphenyl ether	N		
Bromoform	N		
Bromomethane	Y	10	Y
Bromotrichloromethane	N		
Bromoxynil	N		
Bromoxynil octanoate	N		
1,3-Butadiene	Y	10	Y
n-Butanol	N		
Butyl benzyl phthalate	N		
Butylate	N		
t-Butylchloride	N		
Butylphthalyl butylglycolate (BPBG)	N		
Cacodylic acid	N		
Cadmium (water)	N		
Cadmium (food)	N		
Calcium cyanide	N		
Caprolactam	N		
Captafol	N		
Captan	N		
Carbaryl	N		
Carbofuran	N		
Carbon disulfide	Y	3	Y
Carbon tetrachloride	Y	10	Y
Carbonyl sulfide	N		
Carbosulfan	N		
Carboxin	N		
Cerium Oxide and Cerium Compounds	Y	10	Y
Chloral hydrate	N		
Chloramben	N		
Chlordane (Technical)	Y	10	Y
Chlordecone (Kepone)	N		
Chlorimuron-ethyl	N		
Chlorine	N		
Chlorine cyanide	N		
Chlorine dioxide	Y	10	Y
Chlorite (sodium salt)	N		
1-Chloro-1,1-difluoroethane	Y	10	Y
2-Chloroacetophenone	Y	10	Y
p-Chloroaniline	N		
Chlorobenzene	N		
Chlorobenzilate	N		
1-Chlorobutane	N		
2-Chlorobutane	N		
Chlorocyclopentadiene	N		
Chlorodifluoromethane	Y	10	Y
Chloroform	N		
Chloromethyl methyl ether (CMME)	N		

beta-Chloronaphthalene	N		
2-Chlorophenol	N		
p-Chlorophenyl methyl sulfide	N		
p-Chlorophenyl methyl sulfone	N		
p-Chlorophenyl methyl sulfoxide	N		
Chloroprene	Y	10	Y
Chlorothalonil	N		
o-Chlorotoluene	N		
Chlorpropham	N		
Chlorpyrifos	N		
Chlorsulfuron	N		
Chromium(III), insoluble salts	N		
Chromium(VI) - oral			
Chromium(VI) - inhalation/acid mists and aerosols	Y	10	Y
Chromium(VI) - inhalation/particulates	Y	10	Y
Chrysene	N		
Coke oven emissions	N		
Copper	N		
Copper cyanide	N		
Creosote	N		
Crotonaldehyde	N		
Cumene	Y	10	Y
Cyanazine	N		
Cyanide, free	N		
Cyanogen	N		
Cyanogen bromide	N		
Cyclohexane	Y	10	Y
Cyclohexanone	N		
Cyclohexylamine	N		
Cyhalothrin/Karate	N		
Cypermethrin	N		
Cyromazine	N		
Dacthal	N		
Dalapon, sodium salt	N		
Danitol	N		
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)	N		
Demeton	N		
Di (2-ethylhexyl)phthalate (DEHP)	N		
Di(2-ethylhexyl)adipate	N		
2,4-Diaminotoluene	N		
Diazomethane	N		
Dibenz[a,h]anthracene	N		
Dibenzofuran	N		
1,2-Dibromo-3-chloropropane (DBCP)	Y	10	Y
1,4-Dibromobenzene	N		
Dibromochloromethane	N		
Dibromodichloromethane	N		

p,p'-Dibromodiphenyl ether	N		
1,2-Dibromoethane	Y	10	Y
Dibutyl phthalate	N		
Dicamba	N		
Dichloroacetic acid	N		
1,2-Dichlorobenzene	N		
1,3-Dichlorobenzene	N		
1,4-Dichlorobenzene	Y	10	Y
3,3'-Dichlorobenzidine	N		
Dichlorodifluoromethane	N		
p,p'-Dichlorodiphenyl dichloroethane (DDD)	N		
p,p'-Dichlorodiphenyldichloroethylene (DDE)	N		
p,p'-Dichlorodiphenyltrichloroethane (DDT)	N		
1,1-Dichloroethane	N		
1,2-Dichloroethane	N		
cis-1,2-Dichloroethylene	N		
trans-1,2-Dichloroethylene	N		
1,1-Dichloroethylene (1,1-DCE)	Y	10	Y
Dichloromethane	Y	3	Y
2,4-Dichlorophenol	N		
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	N		
2,4-Dichlorophenoxyacetic acid (2,4-D)	N		
1,2-Dichloropropane	Y	10	Y
2,3-Dichloropropanol	N		
1,3-Dichloropropene	Y	10	Y
Dichlorvos	Y	10	Y
Dicofol	N		
Dieldrin	N		
Diesel engine exhaust	Y	10	Y
Diethyl phthalate	N		
Diethyl sulfate	N		
Diethyl-p-nitrophenylphosphate	N		
Diethylene glycol dinitrate (DEGDN)	N		
Difenzoquat	N		
Diflubenzuron	N		
1,1-Difluoroethane	Y	10	Y
Diisopropyl methylphosphonate (DIMP)	N		
Dimethipin	N		
Dimethoate	N		
Dimethyl phthalate	N		
Dimethyl sulfate	N		
Dimethyl terephthalate (DMT)	N		
Dimethylamine	N		
N-N-Dimethylaniline	N		
3,3-Dimethylbenzidine	N		
N,N-Dimethylformamide	Y	10	Y
2,4-Dimethylphenol	N		

2,6-Dimethylphenol	N		
3,4-Dimethylphenol	N		
4,6-Dinitro-o-cyclohexyl phenol	N		
m-Dinitrobenzene	N		
o-Dinitrobenzene	N		
2,4-Dinitrophenol	N		
2,4-Dinitrotoluene	N		
2,4-/2,6-Dinitrotoluene mixture	N		
Dinoseb	N		
1,4-Dioxane	N		
Diphenamid	N		
Diphenylamine	N		
1,2-Diphenylhydrazine	N		
Diquat	N		
Disulfoton	N		
1,4-Dithiane	N		
Diuron	N		
Dodine	N		
Endosulfan	N		
Endothall	N		
Endrin	N		
Epichlorohydrin	Y	10	Y
1,2-Epoxybutane (EBU)	Y	10	Y
Ethephon	N		
Ethion	N		
2-Ethoxyethanol	Y	10	Y
Ethyl acetate	N		
Ethyl carbamate	N		
Ethyl chloride	Y	10	Y
S-Ethyl dipropylthiocarbamate (EPTC)	N		
Ethyl ether	N		
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)	N		
Ethylbenzene	Y	10	Y
Ethylene diamine	N		
Ethylene glycol	N		
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	Y	10	Y
Ethylene thiourea (ETU)	N		
Ethyleneimine	N		
Ethylphthalyl ethylglycolate (EPEG)	N		
Express	N		
Fenamiphos	N		
Fluometuron	N		
Fluoranthene	N		
Fluorene	N		
Fluorine (soluble fluoride)	N		
Fluridone	N		
Flurprimidol	N		

Flutolanil	N		
Fluvalinate	N		
Folpet	N		
Fomesafen	N		
Fonofos	N		
Formaldehyde	N		
Formic acid	N		
Fosetyl-al	N		
Furan	N		
Furfural	N		
Furmecyclox	N		
Glufosinate-ammonium	N		
Glycidaldehyde	N		
Glyphosate	N		
Haloxypop-methyl	N		
Harmony	N		
Heptachlor	N		
Heptachlor epoxide	N		
n-Heptane	N		
Hexabromobenzene	N		
Hexabromodiphenyl ether	N		
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)	N		
Hexachlorobenzene	N		
Hexachlorobutadiene	N		
alpha-Hexachlorocyclohexane (alpha-HCH)	N		
beta-Hexachlorocyclohexane (beta-HCH)	N		
delta-Hexachlorocyclohexane (delta-HCH)	N		
epsilon-Hexachlorocyclohexane (epsilon-HC)	N		
gamma-Hexachlorocyclohexane (gamma-HCH)	N		
technical Hexachlorocyclohexane (t-HCH)	N		
Hexachlorocyclopentadiene (HCCPD)	Y	10	Y
Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD	N		
Hexachloroethane	Y	10	Y
Hexachlorophene	N		
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	N		
1,6-Hexamethylene diisocyanate	Y	10	Y
n-Hexane	Y	10	Y
2-Hexanone	Y	10	Y
Hexazinone	N		
Hydrazine/Hydrazine sulfate	N		
Hydrogen Cyanide and Cyanide Salts	Y	10	Y
Hydrogen chloride	Y	10	Y
Hydrogen sulfide	Y	10	Y
Hydroquinone	N		
Imazalil	N		
Imazaquin	N		
Indeno[1,2,3-cd]pyrene	N		

Iprodione	N		
Isobutyl alcohol	N		
Isophorone	N		
Isopropalin	N		
Isopropyl methyl phosphonic acid (IMPA)	N		
Isoxaben	N		
Lactofen	N		
Lead and compounds (inorganic)	N		
d-Limonene	N		
Linuron	N		
Londax	N		
Malathion	N		
Maleic anhydride	N		
Maleic hydrazide	N		
Maneb	N		
Manganese	Y	10	Y
Mepiquat chloride	N		
Mercuric chloride (HgCl ₂)	N		
Mercury, elemental	Y	C	Y
Merphos	N		
Merphos oxide	N		
Metalaxyl	N		
Methacrylonitrile	N		
Methamidophos	N		
Methanol	N		
Methidathion	N		
Methomyl	N		
Methoxychlor	N		
2-Methoxyethanol	Y	10	Y
Methyl acrylate	N		
Methyl chloride	Y	10	Y
Methyl chlorocarbonate	N		
Methyl ethyl ketone (MEK)	Y	10	Y
Methyl iodide	N		
Methyl isobutyl ketone (MIBK)	Y	10	Y
Methyl isocyanate	N		
Methyl methacrylate	Y	3	Y
Methyl parathion	N		
Methyl tert-butyl ether (MTBE)	Y	10	Y
4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	N		
2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPD)	N		
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	N		
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	Y	10	Y
4,4'-Methylene bis(N,N'-dimethyl)aniline	N		
Methylmercury (MeHg)	N		
2-Methylnaphthalene	N		
2-Methylphenol	N		

3-Methylphenol	N		
4-Methylphenol	N		
Metolachlor	N		
Metribuzin	N		
Mirex	N		
Molinate	N		
Molybdenum	N		
Monochloramine	N		
Naled	N		
Naphthalene	Y	10	Y
Napropamide	N		
Nickel carbonyl	N		
Nickel refinery dust	N		
Nickel subsulfide	N		
Nickel, soluble salts	N		
Nitrapyrin	N		
Nitrate	N		
Nitric oxide	N		
Nitrite	N		
Nitrobenzene	Y	10	Y
Nitrogen dioxide	N		
Nitroguanidine	N		
p-Nitrophenol	N		
2-Nitropropane	Y	10	Y
N-Nitroso-N-methylethylamine	N		
N-Nitroso-di-n-butylamine	N		
N-Nitrosodi-N-propylamine	N		
N-Nitrosodiethanolamine	N		
N-Nitrosodiethylamine	N		
N-Nitrosodimethylamine	N		
N-Nitrosodiphenylamine	N		
N-Nitrosopyrrolidine	N		
Nonabromodiphenyl ether	N		
Norflurazon	N		
NuStar	N		
Octabromodiphenyl ether	N		
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	N		
Oryzalin	N		
Oxadiazon	N		
Oxamyl	N		
Oxyfluorfen	N		
Paclobutrazol	N		
Paraquat	N		
Parathion	N		
Pendimethalin	N		
Pentabromodiphenyl ether	N		
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)	N		

Pentachlorobenzene	N		
Pentachlorocyclopentadiene	N		
Pentachloronitrobenzene (PCNB)	N		
Pentachlorophenol	N		
Pentafluoroethane	N		
Perchlorate (ClO ₄) and Perchlorate Salts	N		
Permethrin	N		
Phenanthrene	N		
Phenmedipham	N		
Phenol	N		
m-Phenylenediamine	N		
Phenylmercuric acetate	N		
Phosalone	N		
Phosgene	Y	10	Y
Phosmet	N		
Phosphine	Y	10	Y
Phosphoric acid	Y	10	Y
Phthalic anhydride	N		
Picloram	N		
Pirimiphos-methyl	N		
Polychlorinated biphenyls (PCBs)	N		
Potassium cyanide	N		
Potassium silver cyanide	N		
Prochloraz	N		
Prometon	N		
Prometryn	N		
Pronamide	N		
Propachlor	N		
Propanil	N		
Propargite (UF = 1,000)	N		
Propargite (UF = 100)	N		
Propargyl alcohol	N		
Propazine	N		
Propham	N		
Propiconazole	N		
beta-Propiolactone	N		
Propionaldehyde	Y	10	Y
Propylene glycol	N		
Propylene glycol monoethyl ether	N		
Propylene glycol monomethyl ether (PGME)	Y	10	Y
Propylene oxide	Y	10	Y
Propyleneimine	N		
Pursuit	N		
Pydrin	N		
Pyrene	N		
Pyridine	N		
Quinalphos	N		

Quinoline	N		
Quinone	N		
Radium 226,228	N		
Radon 222	N		
Refractory ceramic fibers	N		
Resmethrin	N		
Rotenone	N		
Savey	N		
Selenious acid	N		
Selenium and Compounds	N		
Selenium sulfide	N		
Selenourea	N		
Sethoxydim	N		
Silver	N		
Silver cyanide	N		
Simazine	N		
Sodium azide	N		
Sodium cyanide	N		
Sodium diethyldithiocarbamate	N		
Sodium fluoroacetate	N		
Strontium	N		
Strychnine	N		
Styrene	Y	3	Y
Systhane	N		
Tebuthiuron	N		
Terbacil	N		
Terbutryn	N		
Tetrabromodiphenyl ether	N		
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)	N		
1,2,4,5-Tetrachlorobenzene	N		
Tetrachlorocyclopentadiene	N		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	N		
1,1,1,2-Tetrachloroethane	N		
1,1,2,2-Tetrachloroethane (subchronic)	N		
1,1,2,2-Tetrachloroethane (chronic)	N		
Tetrachloroethylene	Y	10	Y
2,3,4,6-Tetrachlorophenol	N		
Tetrachlorovinphos	N		
Tetraethyl lead	N		
Tetraethyldithiopyrophosphate	N		
1,1,1,2-Tetrafluoroethane	Y	10	Y
Tetrahydrofuran	Y	10	Y
Thallium (I), soluble salts	N		
Thallium acetate	N		
Thallium carbonate	N		
Thallium chloride	N		
Thallium nitrate	N		

Thallium oxide	N		
Thallium selenite	N		
Thallium(I) sulfate	N		
Thiobencarb	N		
Thiophanate-methyl	N		
Thiram	N		
Toluene	Y	10	Y
2,4-/2,6-Toluene diisocyanate mixture (TDI)	Y	10	Y
Toxaphene	N		
Tralomethrin	N		
Triallate	N		
Triasulfuron	N		
1,2,4-Tribromobenzene	N		
Tribromochloromethane	N		
Tribromodiphenyl ether	N		
Tributyltin oxide (TBTO)	N		
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	N		
Trichloroacetic acid	N		
1,2,4-Trichlorobenzene	N		
Trichlorocyclopentadiene	N		
1,1,1-Trichloroethane (Acute)	Y	10	Y
1,1,1-Trichloroethane (Short-term)	Y	10	Y
1,1,1-Trichloroethane (Subchronic)	Y	10	Y
1,1,1-Trichloroethane (Chronic)	Y	10	Y
1,1,2-Trichloroethane	N		
Trichloroethylene (adult immunological effects)	Y	3	Y
Trichloroethylene (development immunotoxicity)	N		
Trichloroethylene (heart malformations)	Y	3	Y
Trichlorofluoromethane	N		
2,4,5-Trichlorophenol	N		
2,4,6-Trichlorophenol	N		
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	N		
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	N		
1,1,2-Trichloropropane	N		
1,2,3-Trichloropropane	Y	10	Y
Tricresol	N		
Tridiphan	N		
Triethylamine	Y	10	Y
Triethylene glycol monobutyl ether	N		
Triethylene glycol monoethyl ether	N		
Trifluralin	N		
2,2,4-Trimethylpentane	N		
1,3,5-Trinitrobenzene	N		
2,4,6-Trinitrotoluene (TNT)	N		
Uranium, natural	N		
Uranium, soluble salts	N		
Urea	N		

Vanadium pentoxide	N		
Vernam	N		
Vinclozolin	N		
Vinyl acetate	Y	10	Y
Vinyl bromide	Y	10	Y
Vinyl chloride	Y	10	Y
Warfarin	N		
White phosphorus	N		
Xylenes	Y	10	Y
Zinc and Compounds	N		
Zinc cyanide	N		
Zinc phosphide	N		
Zineb	N		

es								
Interspecies			L to N					
Note	Value	Disc'd	Note	Value	Disc'd	Note	Value	Disc'd
	C	Y		1	N	N as POD	10	Y
	3	Y		1	N	N as POD	1	Y
	3	Y		3	Y		10	Y
	3	Y		N/A	Y	BMR	1	Y
	C	Y		C	Y		3	Y
	3	Y		3	Y		1	N
	3	Y		1	N	N as POD	10	Y
	1	N	Human exposure	1	N	N as POD	1	N
	10	Y		1	N	N as POD	10	Y
	3	Y		?	N	BMR pre-03	3	Y

ED_002435_00002093-00080

	3	Y		3	Y		1	N
	3	Y		?	Y	Other UF	1	Y
	1	N	Human exposure	?	N	BMR pre-03	C	Y
	3	Y		N/A	Y	BMR	1	Y
	3	Y		N/A	Y	BMR	10	Y
	3	Y		1	N	N as POD	10	Y
	10	Y		C	Y		10	Y
	3	Y		1	N	N as POD	1	N
	C	Y		10	Y		1	N
	3	Y		1	N	N as POD	1	N

ED_002435_00002093-00082

	3	Y		N/A	N	BMR post-03	1	Y
	3	Y		1	N	N as POD	3	Y
	3	Y		N/A	Y	BMR	1	Y
	3	Y		N/A	Y	BMR	1	Y
	3	Y		3	Y		3	Y
	3	Y		?	N	BMR pre-03	1	N
	3	Y		1	N	N as POD	1	N
	3	Y		1	N	N as POD	1	Y
	3	Y		1	N	N as POD	1	N
	1	N	Human exposure	C	Y		C	Y

ED_002435_00002093-00084

[illegible]

ED_002435_00002093-00088

ED_002435_00002093-00089

ED_002435_00002093-00090

APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	3	Y	APR 2019	1	N	N as POD	1	N
APR 2019	3	Y	APR 2019	10	Y	APR 2019	1	N
APR 2019	3	Y	APR 2019	1	N	N as POD	1	N
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	3	Y	APR 2019	1	N	N as POD	3	Y
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019
APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019	APR 2019

[illegible]

29-mon rat inhalation study
2-yr mouse inhalation study
rat chronic inhalation study
2-yr rat inhalation study
2-yr rat and mouse inhalation study
chronic rat inhalation study

[illegible]

[illegible]

rat chronic inhalation study

mouse subchronic inhalation study

rat/mouse chronic inhalation
rat chronic feeding study
rat chronic feeding study

Subchronic to Chronic	
Endpt	

Mortality	

Degenerative nerve changes	

Degeneration and inflammation of nasal respiratory epithelium; hyperplasia of mucous secreting cells	

Lack of evidence of decreased pulmonary function or changes in subjective symptomatology	

[illegible]

Nasal epithelial lesions
Hypertrophy, basophilic and eosinophilic foci, in the liver
Liver cell polymorphism

Note	Value	Disc'd	Database		Combined	Other
			DB conf	Note		
	C	Y			10 (Inter, DB)	None
Dur not factor	3	Y			None	None
	1	Y	Low/Medium		None	None
Chron study/CE	1	Y	Low/Medium		None	None
	?	N	Medium	med DB conf	10 (Inter, LtN)	None
Chron study/CE	10	Y			None	None
	10	Y			None	None
Chron study/CE	3	Y			None	None
	3	Y			None	None
	3	Y			None	None

[illegible]

Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	3	Y			None	10
	C	Y			10 (Subch, DB)	None
Chron study/CE	3	Y			None	None
	3	Y			None	None
	3	Y			None	None
	C	Y			10 (LtN, DB)	None
Chron study/CE	10	Y			None	None
Chron study/CE	C	Y			10 (Inter, DB)	None
Chron study/CE	3	Y			None	None

[illegible]

Chron study/CE	10	Y			None	None
	?	N	Medium	med DB conf	None	None
Dur not factor	1	Y	Medium		None	None
Chron study/CE	3	Y			None	None
	?	N	Medium	med DB conf	None	None
Chron study/CE	1	Y	High		None	None
Chron study/CE	3	Y			None	None
Chron study/CE	1	Y	Not Spec'd		None	None
Chron study/CE	10	Y			None	None
	C	Y			30 (LtN, Subch, DB)	None

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Chron study/CE	1	N	High	high DB conf	None	None
Chron study/CE	10	Y			None	None
Chron study/CE	1	Y	Medium/High		None	None
	3	Y			None	None

See note re: BMR analogue to LtN
No specific RfD/RfC - superceded by Hydrogen Cyanide and Cyanide Salts
Teratogenic study = chronic (RfD)? BMR as LtN question
See UF discussion as an example of where implied but not specifically stated - said "N" anyway
See UF discussion as an example of inexact language - previous analysis takes precedence with non-1 value
Note specific discussion of database factors, i.e., not needed though medium confidence
See discussion of rationale for not needing less-than-lifetime UF for developmental study
See discussion of rationale for not needing less-than-lifetime UF for developmental study
Teratogenic study = chronic?

See equation - good explanation for 1s
Main study is developmental. DB factor adjusted for incomplete data on chronic. Unclear if subchronic should be flagged
No specific RfD/RfC - superceded by Hydrogen Cyanide and Cyanide Salts
No specific RfD/RfC - superceded by Hydrogen Cyanide and Cyanide Salts
Good discussion about developmental effects/less than chronic study
Developmental study at main study

[illegible]

Additional details on 6-month dog feeding study as meeting requirements for "chronic" included
Intra and Interspecies were reversed in this spreadsheet but NOT in the IRIS database

Inter-individual or Intraspecies Variability (UF_H)
Summary of Review IRIS Uncertainty Factors with a Unit or Null Value
Support for EPA's Integrated Risk Information System
July 31, 2012

Table 1A: UF is explicitly addressed in Summary in a way that supports $UF_H = 1$

Line No.
67
70
271
384
386

Count =

Table 1B: UF is not explicitly addressed, but other information in the Summary supports a $UF_H = 1$

Line No.
336

Count =

Substance	Type	Date
Benzoic acid	RfD	1991
Beryllium and compounds	RfC	1998
Fluorine (soluble fluoride)	RfD	1987
Nitrate	RfD	1991
Nitrite	RfD	1987

5

Substance	Type	Date	Comment
Manganese	RfD	1995	POD based on many cross-sections of human populations

1

Interspecies Uncertainty Factor (UF_A)

Summary of Review IRIS Uncertainty Factors with a Unit or Null Value

Support for EPA's Integrated Risk Information System

July 31, 2012

[Links:](#)

Table 2A: UF is explicitly addressed in Summary in a way that supports UF_A = 1

Line No.
3
262
262
271
314
365
420
493
497
497
515
529
530
565

Count =

[Return to top](#)

Table 2B: UF is not explicitly addressed, but other information in the Summary supports a UF_A = 1

Line No.
18
29
43
53
61
61
67
70
99
100
107
113
146
225
229

232
250
251
332
336
336
339
374
384
386
434
470
471
475
484
516
525
562

Count =

[Return to top](#)

Table 2A: Explicitly addressed, supports UF = 1

Table 2B: Not addressed, but info supports UF = 1

Substance	Type	Date
Acephate	RfD	1989
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfD	2010
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfC	2010
Fluorine (soluble fluoride)	RfD	1987
Hydrogen Cyanide and Cyanide Salts	RfC	2010
Methylmercury (MeHg)	RfD	2001
Perchlorate (ClO ₄) and Perchlorate Salts	RfD	2005
2,3,7,8-Tetrachlorodibenzo-p-dioxin	RfD	2012
Tetrachloroethylene	RfD	2012
Tetrachloroethylene	RfC	2012
Toluene	RfC	2005
1,1,1-Trichloroethane (Acute)	RfC	2007
1,1,1-Trichloroethane (Short-term)	RfC	2007
Zinc and Compounds	RfD	2005

14

Substance	Type	Date
Aldicarb	RfD	1993
Ammonia	RfC	1991
Arsenic, inorganic	RfD	1995
Baygon	RfD	1987
Benzene	RfD	2003
Benzene	RfC	2003
Benzoic acid	RfD	1991
Beryllium and compounds	RfC	1998
Cadmium (water)	RfD	1991
Cadmium (food)	RfD	1991
Carbon disulfide	RfC	1995
Chloral hydrate	RfD	2000
Chromium(VI) - inhalation/acid mists and aerosols	RfC	1998
N,N-Dimethylformamide	RfC	1990
4,6-Dinitro-o-cyclohexyl phenol	RfD	1988

2,4-Dinitrophenol	RfD	1991
Ethephon	RfD	1988
Ethion	RfD	1989
Malathion	RfD	1987
Manganese	RfD	1995
Manganese	RfC	1995
Mercury, elemental	RfC	1995
Molybdenum	RfD	1992
Nitrate	RfD	1991
Nitrite	RfD	1987
Pirimiphos-methyl	RfD	1987
Selenious acid	RfD	1991
Selenium and Compounds	RfD	1991
Silver	RfD	1991
Styrene	RfC	1992
2,4-/2,6-Toluene diisocyanate mixture (TDI)	RfC	1995
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	RfD	1988
Warfarin	RfD	1987

Comment
POD based on epidemiological or other type of human study
POD based on epidemiological or other type of human study
POD based on epidemiological or other type of human study
POD based on epidemiological or other type of human study
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POD based on epidemiological or other type of human study
POD based on epidemiological or other type of human study

Uncertainty in Extrapolating from a LOAEL Rather than from a NOAEL (UF_L)
Summary of Review IRIS Uncertainty Factors with a Unit or Null Value
Support for EPA's Integrated Risk Information System
July 31, 2012

[Links:](#)

Table 3A: UF is explicitly addressed in Summary in a way that supports UF_L = 1

Line No.
6
11
168
236
295
306
310
420
515
531
532
564
565

Count =

[Return to top](#)

Table 3B: UF is not explicitly addressed, but other information in the Summary supports a UF_L = 1

Line No.
1
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566

Count =

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Table 3C: UF is explicitly addressed in Summary in a way that supports UF_L = "not applicable (N/A)"

Line No.
12
12
51
70
82
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108
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424

428
451
490
495
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526
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543
543

Count =

[Return to top](#)

Table 3D: UF is not explicitly addressed, but other information in Summary supports a UF_L = "not applicable (N/A)"

Line No.
79
181

Count =

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Table 3E: UF is not explicitly addressed, and it is unclear whether a UF_L value of 1 or "not applicable" best reflects the c

Line No.
37
61
61
92
107
147
159
204
204
304
357
363
365
431
502
524

Count =

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Table 3F: UF is not explicitly addressed; info in Summary does not support a UF_L of 1 or N/A; further review required

Line No.
78
475

Count =

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Table 3A: Explicitly addressed, supports UF = 1

Table 3B: Not addressed, but info supports UF = 1

Table 3C: Explicitly addressed, supports UF = N/A

Table 3D: Not addressed, but info supports UF = N/A

Table 3E: Not addressed, unclear what value best reflects decision; further review required

Table 3F: Not addressed, info does not support UF = 1 or N/A; further review required

Substance	Type	Date
Acetone	RfD	2003
Acrolein	RfD	2003
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)	RfD	2008
1,4-Dioxane	RfD	2010
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)	RfD	2008
Hexachloroethane	RfC	2011
n-Hexane	RfC	2005
Perchlorate (ClO ₄) and Perchlorate Salts	RfD	2005
Toluene	RfC	2005
1,1,1-Trichloroethane (Subchronic)	RfC	2007
1,1,1-Trichloroethane (Chronic)	RfC	2007
Xylenes	RfD	2003
Zinc and Compounds	RfD	2005

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Substance	Type	Date
Acenaphthene	RfD	1990
Acetaldehyde	RfC	1991
Acetochlor	RfD	1993
Acetonitrile	RfC	1999
Acetophenone	RfD	1991
Acifluorfen, sodium	RfD	1987
Acrylic acid	RfD	1994
Alachlor	RfD	1993
Alar	RfD	1988
Aldicarb	RfD	1993
Aldicarb sulfone	RfD	1993
Ally	RfD	1988

Allyl alcohol	RfD	1988
Allyl chloride	RfC	1991
Aluminum phosphide	RfD	1987
Amdro	RfD	1987
Ametryn	RfD	1987
Amitraz	RfD	1988
Ammonia	RfC	1991
Ammonium sulfamate	RfD	1989
Aniline	RfC	1990
Anthracene	RfD	1991
Apollo	RfD	1991
Aroclor 1016	RfD	1993
Arsenic, inorganic	RfD	1995
Arsine	RfC	1994
Assure	RfD	1991
Atrazine	RfD	1993
Avermectin B1	RfD	1989
Bayleton	RfD	1988
Baythroid	RfD	1988
Benefin	RfD	1987
Benomyl	RfD	1987
Bentazon (Basagran)	RfD	1998
Benzaldehyde	RfD	1988
Benzoic acid	RfD	1991
Bidrin	RfD	1987
Biphenthrin	RfD	1988
1,1-Biphenyl	RfD	1991
Bis(2-chloro-1-methylethyl) ether	RfD	1989
Bromate	RfD	2001
Bromoform	RfD	1993
Bromomethane	RfD	1992
Bromoxynil	RfD	1988
Bromoxynil octanoate	RfD	1988
n-Butanol	RfD	1991
Butyl benzyl phthalate	RfD	1989
Butylate	RfD	1994
Butylphthalyl butylglycolate (BPBG)	RfD	1987
Cadmium (water)	RfD	1991
Cadmium (food)	RfD	1991
Caprolactam	RfD	1994
Captan	RfD	1989
Carbaryl	RfD	1991
Carbofuran	RfD	1987
Carbon disulfide	RfD	1995
Carbosulfan	RfD	1987
Carboxin	RfD	1987
Chlordane (Technical)	RfD	1998

Chlordane (Technical)	RfC	1998
Chlorimuron-ethyl	RfD	1989
Chlorine	RfD	1994
Chlorine cyanide	RfD	1987
Chlorine dioxide	RfD	2000
Chlorite (sodium salt)	RfD	2000
1-Chloro-1,1-difluoroethane	RfC	1995
Chlorobenzene	RfD	1990
Chlorobenzilate	RfD	1989
Chlorodifluoromethane	RfC	1993
beta-Chloronaphthalene	RfD	1990
2-Chlorophenol	RfD	1988
Chlorothalonil	RfD	1988
o-Chlorotoluene	RfD	1990
Chlorpropham	RfD	1988
Chlorsulfuron	RfD	1987
Chromium(III), insoluble salts	RfD	1988
Chromium(VI) - oral	RfD	1998
Copper cyanide	RfD	1988
Cumene	RfD	1997
Cumene	RfC	1997
Cyanogen bromide	RfD	1988
Cyclohexanone	RfD	1987
Cyclohexylamine	RfD	1988
Cyhalothrin/Karate	RfD	1988
Cypermethrin	RfD	1989
Cyromazine	RfD	1987
Dacthal	RfD	1994
Dalapon, sodium salt	RfD	1988
Danitol	RfD	1994
Di(2-ethylhexyl)adipate	RfD	1992
1,2-Dibromo-3-chloropropane (DBCP)	RfC	1991
1,4-Dibromobenzene	RfD	1987
Dibromochloromethane	RfD	1992
Dibutyl phthalate	RfD	1990
Dicamba	RfD	1988
1,2-Dichlorobenzene	RfD	1990
1,4-Dichlorobenzene	RfC	1994
Dichlorodifluoromethane	RfD	1988
p,p'-Dichlorodiphenyltrichloroethane (DDT)	RfD	1988
2,4-Dichlorophenol	RfD	1988
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	RfD	1987
2,4-Dichlorophenoxyacetic acid (2,4-D)	RfD	1987
2,3-Dichloropropanol	RfD	1990
Dichlorvos	RfD	1994
Dichlorvos	RfC	1994
Dieldrin	RfD	1991

Diesel engine exhaust	RfC	2003
Diethyl phthalate	RfD	1988
Difenzoquat	RfD	1988
Diflubenzuron	RfD	1987
1,1-Difluoroethane	RfC	1994
Diisopropyl methylphosphonate (DIMP)	RfD	1989
Dimethipin	RfD	1988
Dimethoate	RfD	1988
2,4-Dimethylphenol	RfD	1990
2,6-Dimethylphenol	RfD	1988
3,4-Dimethylphenol	RfD	1988
m-Dinitrobenzene	RfD	1991
2,4-Dinitrotoluene	RfD	1992
Diphenamid	RfD	1987
Diphenylamine	RfD	1987
Diquat	RfD	1987
Diuron	RfD	1988
Dodine	RfD	1987
Endosulfan	RfD	1994
Endothall	RfD	1987
Endrin	RfD	1989
Epichlorohydrin	RfC	1992
Ethion	RfD	1989
2-Ethoxyethanol	RfC	1991
Ethyl acetate	RfD	1987
Ethyl chloride	RfC	1991
S-Ethyl dipropylthiocarbamate (EPTC)	RfD	1987
Ethyl ether	RfD	1990
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)	RfD	1987
Ethylbenzene	RfD	1991
Ethylbenzene	RfC	1991
Ethylene glycol	RfD	1987
Ethylphthalyl ethylglycolate (EPEG)	RfD	1987
Express	RfD	1989
Fenamiphos	RfD	1987
Fluometuron	RfD	1988
Fluoranthene	RfD	1990
Fluorene	RfD	1990
Fluorine (soluble fluoride)	RfD	1987
Fluridone	RfD	1987
Flurprimidol	RfD	1989
Fluvalinate	RfD	1988
Folpet	RfD	1988
Fonofos	RfD	1987
Formaldehyde	RfD	1991
Fosetyl-al	RfD	1988
Furan	RfD	1987

Glufosinate-ammonium	RfD	1987
Glycidaldehyde	RfD	1991
Glyphosate	RfD	1989
Haloxypop-methyl	RfD	1990
Harmony	RfD	1988
Heptachlor	RfD	1991
Hexabromobenzene	RfD	1988
Hexachlorobenzene	RfD	1991
gamma-Hexachlorocyclohexane (gamma-HCH)	RfD	1988
Hexachlorocyclopentadiene (HCCPD)	RfC	2001
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	RfD	1990
1,6-Hexamethylene diisocyanate	RfC	1994
Hexazinone	RfD	1990
Hydrogen sulfide	RfC	2003
Imazalil	RfD	1987
Imazaquin	RfD	1987
Iprodione	RfD	1988
Isobutyl alcohol	RfD	1987
Isophorone	RfD	1992
Isopropalin	RfD	1987
Isopropyl methyl phosphonic acid (IMPA)	RfD	1992
Isoxaben	RfD	1991
Londax	RfD	1988
Malathion	RfD	1987
Maleic anhydride	RfD	1988
Maneb	RfD	1988
Manganese	RfD	1995
Mepiquat chloride	RfD	1988
Merphos	RfD	1992
Merphos oxide	RfD	1992
Metalaxyl	RfD	1987
Methacrylonitrile	RfD	1988
Methanol	RfD	1988
Methidathion	RfD	1989
Methomyl	RfD	1987
Methoxychlor	RfD	1992
2-Methoxyethanol	RfC	1991
Methyl chloride	RfC	2001
Methyl isobutyl ketone (MIBK)	RfC	2003
Methyl methacrylate	RfD	1998
Methyl parathion	RfD	1987
Methyl tert-butyl ether (MTBE)	RfC	1993
4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	RfD	1988
2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPD)	RfD	1989
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	RfD	1987
2-Methylphenol	RfD	1992
3-Methylphenol	RfD	1992

Metolachlor	RfD	1990
Metribuzin	RfD	1993
Mirex	RfD	1992
Molinate	RfD	1988
Monochloramine	RfD	1994
Naled	RfD	1987
Naphthalene	RfD	1998
Napropamide	RfD	1989
Nickel, soluble salts	RfD	1991
Nitrate	RfD	1991
Nitrite	RfD	1987
Nitroguanidine	RfD	1990
Norflurazon	RfD	1987
NuStar	RfD	1988
Octabromodiphenyl ether	RfD	1990
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	RfD	1989
Oryzalin	RfD	1989
Oxadiazon	RfD	1987
Oxamyl	RfD	1987
Oxyfluorfen	RfD	1987
Paclobutrazol	RfD	1987
Paraquat	RfD	1988
Pendimethalin	RfD	1988
Pentabromodiphenyl ether	RfD	1990
Pentachloronitrobenzene (PCNB)	RfD	1987
Permethrin	RfD	1987
Phenmedipham	RfD	1990
m-Phenylenediamine	RfD	1987
Phenylmercuric acetate	RfD	1987
Phosmet	RfD	1987
Phosphine	RfD	1995
Phosphine	RfC	1995
Picloram	RfD	1987
Pirimiphos-methyl	RfD	1987
Prochloraz	RfD	1989
Prometon	RfD	1988
Prometryn	RfD	1987
Pronamide	RfD	1987
Propachlor	RfD	1987
Propanil	RfD	1988
Propargite (systemic effects)	RfD	1990
Propargite (maternal and feto- toxicity)	RfD	1990
Propargyl alcohol	RfD	1990
Propazine	RfD	1987
Propham	RfD	1987
Propiconazole	RfD	1988
Propylene glycol monomethyl ether (PGME)	RfC	1991

Pursuit	RfD	1990
Pydrin	RfD	1987
Pyrene	RfD	1991
Pyridine	RfD	1987
Quinalphos	RfD	1987
Rotenone	RfD	1988
Savey	RfD	1988
Selenious acid	RfD	1991
Selenium and Compounds	RfD	1991
Sethoxydim	RfD	1989
Silver cyanide	RfD	1987
Simazine	RfD	1993
Sodium azide	RfD	1987
Sodium diethyldithiocarbamate	RfD	1988
Sodium fluoroacetate	RfD	1991
Strontium	RfD	1992
Styrene	RfD	1992
Styrene	RfC	1992
Systhane	RfD	1988
Tebuthiuron	RfD	1988
Terbacil	RfD	1987
Terbutryn	RfD	1988
1,2,4,5-Tetrachlorobenzene	RfD	1988
2,3,4,6-Tetrachlorophenol	RfD	1988
Tetrachlorovinphos	RfD	1987
Tetraethyldithiopyrophosphate	RfD	1988
Thiobencarb	RfD	1987
Thiophanate-methyl	RfD	1988
Thiram	RfD	1987
2,4-/2,6-Toluene diisocyanate mixture (TDI)	RfC	1995
Tralomethrin	RfD	1989
Triallate	RfD	1990
Triasulfuron	RfD	1991
1,2,4-Tribromobenzene	RfD	1987
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	RfD	1988
1,2,4-Trichlorobenzene	RfD	1992
1,1,2-Trichloroethane	RfD	1991
2,4,5-Trichlorophenol	RfD	1991
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	RfD	1988
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	RfD	1988
1,1,2-Trichloropropane	RfD	1998
Tridiphane	RfD	1987
Triethylamine	RfC	1991
Trifluralin	RfD	1989
1,3,5-Trinitrobenzene	RfD	1997
Vanadium pentoxide	RfD	1988
Vernam	RfD	1987

Vinclozolin	RfD	1987
Vinyl acetate	RfC	1990
Vinyl chloride	RfD	2000
Vinyl chloride	RfC	2000
White phosphorus	RfD	1990
Xylenes	RfC	2003
Zinc cyanide	RfD	1987

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Substance	Type	Date
Acrylamide	RfD	2010
Acrylamide	RfC	2010
Barium and Compounds	RfD	2005
Beryllium and compounds	RfD	1998
Bromobenzene (subchronic)	RfD	2009
Bromobenzene (subchronic)	RfC	2009
Bromobenzene (chronic)	RfD	2009
Bromobenzene (chronic)	RfC	2009
Carbon tetrachloride	RfD	2010
Carbon tetrachloride	RfC	2010
Cerium Oxide and Cerium Compounds	RfC	2009
Chlordecone (Kepone)	RfD	2009
Chloroform	RfD	2001
Chloroprene	RfC	2010
cis-1,2-Dichloroethylene	RfD	2010
trans-1,2-Dichloroethylene	RfD	2010
1,1-Dichloroethylene (1,1-DCE)	RfD	2002
1,1-Dichloroethylene (1,1-DCE)	RfC	2002
Dichloromethane	RfD	2011
Dichloromethane	RfC	2011
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfD	2010
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfC	2010
Hexachloroethane	RfD	2011
2-Hexanone	RfD	2009
2-Hexanone	RfC	2009
Hydrogen Cyanide and Cyanide Salts	RfD	2010
Methyl ethyl ketone (MEK)	RfD	2003
Methyl ethyl ketone (MEK)	RfC	2003
2-Methylnaphthalene	RfD	2003
Nitrobenzene	RfD	2009
Nitrobenzene	RfC	2009
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)	RfD	2008
Phenol	RfD	2002

Phosgene	RfC	2006
Propionaldehyde	RfC	2008
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)	RfD	2008
1,1,2,2-Tetrachloroethane (subchronic)	RfD	2010
1,1,2,2-Tetrachloroethane (chronic)	RfD	2010
Tetrahydrofuran	RfD	2012
Tetrahydrofuran	RfC	2012
Toluene	RfD	2005
Trichloroacetic acid	RfD	2011
1,1,1-Trichloroethane (Subchronic)	RfD	2007
1,1,1-Trichloroethane (Chronic)	RfD	2007
Trichloroethylene (heart malformations)	RfD	2011
Trichloroethylene (heart malformations)	RfC	2011
1,2,3-Trichloropropane	RfD	2009
1,2,3-Trichloropropane	RfC	2009

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Substance	Type	Date
Boron and Compounds	RfD	2004
1,2-Dibromoethane	RfC	2004

2

Decision process

Substance	Type	Date
Antimony trioxide	RfC	1995
Benzene	RfD	2003
Benzene	RfC	2003
1,3-Butadiene	RfC	2002
Carbon disulfide	RfC	1995
Chromium(VI) - inhalation/particulates	RfC	1998
Cyclohexane	RfC	2003
1,3-Dichloropropene	RfD	2000
1,3-Dichloropropene	RfC	2000
Hexachlorocyclopentadiene (HCCPD)	RfD	2001
Methyl methacrylate	RfC	1998
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	RfC	1998
Methylmercury (MeHg)	RfD	2001
Phosphoric acid	RfC	1995
1,1,1,2-Tetrafluoroethane	RfC	1995
Tributyltin oxide (TBTO)	RfD	1997

16

Substance	Type	Date
Bisphenol A.	RfD	1988
Silver	RfD	1991

2

Comment
An NOAEL/NOEL was used as the POD
An NOAEL/NOEL was used as the POD
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[illegible]

Effect-level addressed as consideration in selecting a BMR for BMD/BMC modeling
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Effect-level addressed as consideration in selecting a BMR for BMD/BMC modeling

Comment
Benchmark modeling used, post-EPA policy regarding no need for UF-L (see Table 3C)
Benchmark modeling used, post-EPA policy regarding no need for UF-L (see Table 3C)

Comment
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used; "other" UF used to capture effect-level considerations
Benchmark modeling used; "other" UF used to capture effect-level considerations
Benchmark modeling used; "other" UF used to capture effect-level considerations
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, transitional period re: need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)

Comment
Info in summary suggests that UF discussion is incorrect, UF-L should be 10
POD is an LOAEL, but Summary does not address UF for effect-level extrapolation

Col RfD: 2 13
Col RfC: 25 35

Uncertainty in Extrapolating from Subchronic to Chronic Exposure (UF_S)
Summary of Review IRIS Uncertainty Factors with a Unit or Null Value
Support for EPA's Integrated Risk Information System
July 31, 2012

Links:

Table 4A: UF is explicitly addressed in Summary in a way that supports $UF_S = 1$

Line No.
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Count =

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Table 4B: UF is not explicitly addressed, but other information in the Summary supports a $UF_s = 1$

Line No.
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566

568

Count =

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Table 4C: UF is explicitly addressed in Summary in a way that supports UF_s = "not applicable (N/A)"

Line No.
120
121
159
271
353
353
355
424
503
529
530
531
531
535
536
536

Count =

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Table 4D: UF is not explicitly addressed, but other information in Summary supports a UF_s = "not applicable (N/A)"

Line No.
13
17
49
57
79
82
82
102
107
126
183
255
259
287
348
365
384

386
445
467
495

Count =

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Table 4E: UF is not explicitly addressed; info in Summary does not support a UF_s of 1 or N/A; further review required

Line No.
32
53
250
332
373
433
434

Count =

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Table 4F: UF is explicitly addressed; but info in Summary suggests a change to current UF_s; further review required

Line No.
78
182
203
226

Count =

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Table 4A: Explicitly addressed, supports UF = 1

Table 4B: Not addressed, but info supports UF = 1

Table 4C: Explicitly addressed, supports UF = N/A

Table 4D: Not addressed, but info supports UF = N/A

Table 4E: Not addressed; info does not support a UFS = 1 or N/A; further review required

Table 4F: Explicitly addressed, but info suggests a change to current UF; further review required

Substance	Type	Date
Acephate	RfD	1989
Acetonitrile	RfC	1999
Acrolein	RfD	2003
Acrylamide	RfD	2010
Acrylamide	RfC	2010
Aldicarb	RfD	1993
Aldicarb sulfone	RfD	1993
Barium and Compounds	RfD	2005
Bentazon (Basagran)	RfD	1998
Beryllium and compounds	RfD	1998
Beryllium and compounds	RfC	1998
1,3-Butadiene	RfC	2002
Carbon tetrachloride	RfC	2010
Chloral hydrate	RfD	2000
Chlordecone (Kepone)	RfD	2009
Chloroform	RfD	2001
Chloroprene	RfC	2010
Cyromazine	RfD	1987
1,2-Dibromoethane	RfD	2004
1,2-Dibromoethane	RfC	2004
p,p'-Dichlorodiphenyltrichloroethane (DDT)	RfD	1988
1,1-Dichloroethylene (1,1-DCE)	RfD	2002
1,1-Dichloroethylene (1,1-DCE)	RfC	2002
Dichloromethane	RfD	2011
Dichloromethane	RfC	2011
2,4-Dichlorophenol	RfD	1988
2,4-Dichlorophenoxyacetic acid (2,4-D)	RfD	1987
Diesel engine exhaust	RfC	2003
1,4-Dioxane	RfD	2010
Ethion	RfD	1989
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfD	2010

Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfC	2010
2-Hexanone	RfD	2009
Metalaxyl	RfD	1987
2-Methylnaphthalene	RfD	2003
Nitrobenzene	RfC	2009
Norflurazon	RfD	1987
Pentachlorophenol	RfD	2010
Perchlorate (ClO ₄) and Perchlorate Salts	RfD	2005
Pydrin	RfD	1987
Silver	RfD	1991
2,3,7,8-Tetrachlorodibenzo-p-dioxin	RfD	2012
Tetrachloroethylene	RfD	2012
Tetrachloroethylene	RfC	2012
Tetrahydrofuran	RfC	2012
Thiobencarb	RfD	1987
Toluene	RfC	2005
Trichloroacetic acid	RfD	2011
1,1,1-Trichloroethane (Chronic)	RfC	2007
Trichloroethylene (adult immunological effects)	RfD	2011
Trichloroethylene (adult immunological effects)	RfC	2011
1,2,3-Trichloropropane	RfD	2009
Uranium, soluble salts	RfD	1989
Xylenes	RfD	2003
Zinc and Compounds	RfD	2005

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Substance	Type	Date
Acetochlor	RfD	1993
Acifluorfen, sodium	RfD	1987
Acrylonitrile	RfC	1991
Alachlor	RfD	1993
Aldrin	RfD	1991
Ally	RfD	1988
Aluminum phosphide	RfD	1987
Amitraz	RfD	1988
Ammonia	RfC	1991
Antimony	RfD	1991
Apollo	RfD	1991
Arsenic, inorganic	RfD	1995
Assure	RfD	1991
Asulam	RfD	1988
Atrazine	RfD	1993
Bayleton	RfD	1988

Baythroid	RfD	1988
Benefin	RfD	1987
Benzidine	RfD	1991
Benzoic acid	RfD	1991
Bidrin	RfD	1987
Biphenthrin	RfD	1988
1,1-Biphenyl	RfD	1991
Bis(2-chloro-1-methylethyl) ether	RfD	1989
Bromate	RfD	2001
Bromodichloromethane	RfD	1993
Bromomethane	RfC	1992
Bromoxynil	RfD	1988
Bromoxynil octanoate	RfD	1988
Butylate	RfD	1994
Butylphthalyl butylglycolate (BPBG)	RfD	1987
Cadmium (water)	RfD	1991
Cadmium (food)	RfD	1991
Captafol	RfD	1987
Captan	RfD	1989
Carbaryl	RfD	1991
Carbofuran	RfD	1987
Carbosulfan	RfD	1987
Carboxin	RfD	1987
Chloramben	RfD	1987
Chlordane (Technical)	RfD	1998
Chlorimuron-ethyl	RfD	1989
Chlorine	RfD	1994
Chlorine cyanide	RfD	1987
1-Chloro-1,1-difluoroethane	RfC	1995
2-Chloroacetophenone	RfC	1991
p-Chloroaniline	RfD	1988
Chlorodifluoromethane	RfC	1993
Chlorothalonil	RfD	1988
Chlorpropham	RfD	1988
Chlorsulfuron	RfD	1987
Chromium(III), insoluble salts	RfD	1988
Cyanogen bromide	RfD	1988
Cyclohexanone	RfD	1987
Cyclohexylamine	RfD	1988
Cyhalothrin/Karate	RfD	1988
Cypermethrin	RfD	1989
Dacthal	RfD	1994
Dalapon, sodium salt	RfD	1988
Danitol	RfD	1994
Demeton	RfD	1987
Di(2-ethylhexyl)adipate	RfD	1992
1,2-Dichlorobenzene	RfD	1990

Dichlorodifluoromethane	RfD	1988
1,3-Dichloropropene	RfD	2000
1,3-Dichloropropene	RfC	2000
Dichlorvos	RfD	1994
Dichlorvos	RfC	1994
Dieldrin	RfD	1991
Difenzoquat	RfD	1988
Diflubenzuron	RfD	1987
1,1-Difluoroethane	RfC	1994
Dimethipin	RfD	1988
Dimethoate	RfD	1988
Dimethyl terephthalate (DMT)	RfD	1987
2,4-Dinitrotoluene	RfD	1992
Dinoseb	RfD	1989
Diphenamid	RfD	1987
Diphenylamine	RfD	1987
Diquat	RfD	1987
Disulfoton	RfD	1987
Diuron	RfD	1988
Dodine	RfD	1987
Endosulfan	RfD	1994
Endothall	RfD	1987
Endrin	RfD	1989
1,2-Epoxybutane (EBU)	RfC	1992
S-Ethyl dipropylthiocarbamate (EPTC)	RfD	1987
Ethylene glycol	RfD	1987
Ethylene thiourea (ETU)	RfD	1991
Ethylphthalyl ethylglycolate (EPEG)	RfD	1987
Express	RfD	1989
Fenamiphos	RfD	1987
Fluometuron	RfD	1988
Fluridone	RfD	1987
Flurprimidol	RfD	1989
Flutolanil	RfD	1989
Fluvalinate	RfD	1988
Folpet	RfD	1988
Fonofos	RfD	1987
Formaldehyde	RfD	1991
Fosetyl-al	RfD	1988
Haloxypop-methyl	RfD	1990
Harmony	RfD	1988
Heptachlor	RfD	1991
Heptachlor epoxide	RfD	1991
Hexachlorobenzene	RfD	1991
Hexachlorocyclopentadiene (HCCPD)	RfC	2001
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	RfD	1990
1,6-Hexamethylene diisocyanate	RfC	1994

Hexazinone	RfD	1990
Hydrogen chloride	RfC	1995
Imazalil	RfD	1987
Imazaquin	RfD	1987
Iprodione	RfD	1988
Isoxaben	RfD	1991
Lactofen	RfD	1988
Linuron	RfD	1989
Londax	RfD	1988
Maleic anhydride	RfD	1988
Maleic hydrazide	RfD	1987
Manganese	RfD	1995
Manganese	RfC	1995
Mercury, elemental	RfC	1995
Methamidophos	RfD	1987
Methidathion	RfD	1989
Methomyl	RfD	1987
Methyl methacrylate	RfD	1998
Methyl methacrylate	RfC	1998
Methyl parathion	RfD	1987
Methyl tert-butyl ether (MTBE)	RfC	1993
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	RfD	1987
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	RfC	1998
Metolachlor	RfD	1990
Metribuzin	RfD	1993
Mirex	RfD	1992
Molybdenum	RfD	1992
Monochloramine	RfD	1994
Naled	RfD	1987
Naphthalene	RfC	1998
Napropamide	RfD	1989
Nickel, soluble salts	RfD	1991
2-Nitropropane	RfC	1991
NuStar	RfD	1988
Oryzalin	RfD	1989
Oxadiazon	RfD	1987
Oxamyl	RfD	1987
Oxyfluorfen	RfD	1987
Paraquat	RfD	1988
Pendimethalin	RfD	1988
Pentachloronitrobenzene (PCNB)	RfD	1987
Permethrin	RfD	1987
Phenmedipham	RfD	1990
Phenylmercuric acetate	RfD	1987
Phosmet	RfD	1987
Phosphine	RfD	1995
Phthalic anhydride	RfD	1988

Prochloraz	RfD	1989
Prometryn	RfD	1987
Pronamide	RfD	1987
Propanil	RfD	1988
Propargite (systemic effects)	RfD	1990
Propazine	RfD	1987
Propiconazole	RfD	1988
Propylene oxide	RfC	1991
Pursuit	RfD	1990
Quinalphos	RfD	1987
Rotenone	RfD	1988
Savey	RfD	1988
Selenious acid	RfD	1991
Selenium and Compounds	RfD	1991
Sethoxydim	RfD	1989
Silver cyanide	RfD	1987
Simazine	RfD	1993
Strontium	RfD	1992
Systhane	RfD	1988
Tebuthiuron	RfD	1988
Terbacil	RfD	1987
Terbutryn	RfD	1988
1,1,1,2-Tetrachloroethane	RfD	1991
Tetrachlorovinphos	RfD	1987
1,1,1,2-Tetrafluoroethane	RfC	1995
Thiophanate-methyl	RfD	1988
Thiram	RfD	1987
Tralomethrin	RfD	1989
Triallate	RfD	1990
Triasulfuron	RfD	1991
Tributyltin oxide (TBTO)	RfD	1997
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	RfD	1988
Trichlorofluoromethane	RfD	1987
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	RfD	1988
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	RfD	1988
Tridiphane	RfD	1987
Trifluralin	RfD	1989
1,3,5-Trinitrobenzene	RfD	1997
Vanadium pentoxide	RfD	1988
Vinclozolin	RfD	1987
Vinyl acetate	RfC	1990
Vinyl bromide	RfC	1994
Vinyl chloride	RfD	2000
Vinyl chloride	RfC	2000
Warfarin	RfD	1987
White phosphorus	RfD	1990
Zinc cyanide	RfD	1987

Zineb	RfD	1987
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Substance	Type	Date
Chlorine dioxide	RfD	2000
Chlorite (sodium salt)	RfD	2000
Cyclohexane	RfC	2003
Fluorine (soluble fluoride)	RfD	1987
Methyl ethyl ketone (MEK)	RfD	2003
Methyl ethyl ketone (MEK)	RfC	2003
Methyl isobutyl ketone (MIBK)	RfC	2003
Phenol	RfD	2002
Tetrahydrofuran	RfD	2012
1,1,1-Trichloroethane (Acute)	RfC	2007
1,1,1-Trichloroethane (Short-term)	RfC	2007
1,1,1-Trichloroethane (Subchronic)	RfD	2007
1,1,1-Trichloroethane (Subchronic)	RfC	2007
Trichloroethylene (developmental immunotoxicity)	RfD	2011
Trichloroethylene (heart malformations)	RfD	2011
Trichloroethylene (heart malformations)	RfC	2011

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Substance	Type	Date
Acrylic acid	RfD	1994
Alar	RfD	1988
Avermectin B1	RfD	1989
Benomyl	RfD	1987
Boron and Compounds	RfD	2004
Bromobenzene (subchronic)	RfD	2009
Bromobenzene (subchronic)	RfC	2009
Caprolactam	RfD	1994
Carbon disulfide	RfD	1995
Chlorobenzilate	RfD	1989
Dicamba	RfD	1988
Ethyl chloride	RfC	1991
Ethylbenzene	RfC	1991
Glyphosate	RfD	1989
Methoxychlor	RfD	1992
Methylmercury (MeHg)	RfD	2001
Nitrate	RfD	1991

Nitrite	RfD	1987
Propargite (maternal and feto- toxicity)	RfD	1990
Resmethrin	RfD	1988
1,1,2,2-Tetrachloroethane (subchronic)	RfD	2010

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Substance	Type	Date
Ammonium sulfamate	RfD	1989
Baygon	RfD	1987
Ethephon	RfD	1988
Malathion	RfD	1987
Molinate	RfD	1988
Picloram	RfD	1987
Pirimiphos-methyl	RfD	1987

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Substance	Type	Date
Bisphenol A.	RfD	1988
Dibutyl phthalate	RfD	1990
2,3-Dichloropropanol	RfD	1990
2,4-Dimethylphenol	RfD	1990

4

[illegible]

[illegible]

[illegible]

POD based on chronic study where a critical effect is associated with lifetime exposure

Comment
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
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POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
Reference value applies to less than chronic exposure; UF-S not applicable
Reference value applies to less than chronic exposure; UF-S not applicable
Reference value applies to less than chronic exposure; UF-S not applicable
Reference value applies to less than chronic exposure; UF-S not applicable
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity

Comment
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
Reference value applies to less than chronic exposure; UF-S not applicable
Reference value applies to less than chronic exposure; UF-S not applicable
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
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POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity

POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
POD associated with a specific lifestage effect, including maternal/developmental toxicity
Reference value applies to less than chronic exposure; UF-S not applicable

Comment
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
Summary does not describe duration of study used to derive the POD
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S

Comment
Info in summary suggests that UF discussion is incorrect, UF-S should be 1 (not 10)
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-S
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-S
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-S

Uncertainty Associated with Extrapolation When the Database is Incomplete (UF_D)
 Summary of Review IRIS Uncertainty Factors with a Unit or Null Value
 Support for EPA's Integrated Risk Information System
 July 31, 2012

[Links:](#)

Table 5A: UF is explicitly addressed in Summary in a way that supports $UF_D = 1$

Line No.
11
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493
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561
565

Count =

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Table 5B: UF is not explicitly addressed, but "high" database confidence supports a $UF_D = 1$

Line No.
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Count =

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Table 5C: UF is not explicitly addressed; "medium" overall database confidence could be interpreted as inconsistent with

Line No.
10
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566
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Count =

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Table 5D: UF is not explicitly addressed; "low" database confidence could be interpreted as inconsistent with $UF_D = 1$

Line No.
22
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521
525
538
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557
562
567
146

Count =

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Table 5E: UF is not explicitly addressed; database confidence not specified; further review required to assess UF_D value

Line No.
147

Count =

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Table 5F: UF is explicitly addressed, but information in Summary suggests a change to current UF_D; further review req

Line No.
182
203
226

Count =

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Table 5A: Explicitly addressed, supports UF = 1

Table 5B: Not addressed, "high" database confidence supports UF = 1

Table 5C: Not addressed, "medium" database confidence; further review required

Table 5D: Not addressed, "low" or "low/medium" database confidence; further review required

Table 5E: Not addressed, database confidence unspecified; further review required

Table 5F: Explicitly addressed, but Summary does not support UF = 1; further review required

Substance	Type	Date
Acrolein	RfD	2003
Acrolein	RfC	2003
Acrylamide	RfD	2010
Acrylamide	RfC	2010
Acrylic acid	RfD	1994
Bentazon (Basagran)	RfD	1998
Chloral hydrate	RfD	2000
Chlorine	RfD	1994
Chloroform	RfD	2001
Cyromazine	RfD	1987
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)	RfD	2008
1,1-Dichloroethylene (1,1-DCE)	RfD	2002
1,1-Dichloroethylene (1,1-DCE)	RfC	2002
1,3-Dichloropropene	RfD	2000
1,3-Dichloropropene	RfC	2000
Diesel engine exhaust	RfC	2003
1,2-Epoxybutane (EBU)	RfC	1992
2-Ethoxyethanol	RfC	1991
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfD	2010
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	RfC	2010
Hydrogen chloride	RfC	1995
Methyl methacrylate	RfC	1998
Methylmercury (MeHg)	RfD	2001
Molinate	RfD	1988
Monochloramine	RfD	1994
Nitrobenzene	RfC	2009
Pentachlorophenol	RfD	2010
Perchlorate (ClO ₄) and Perchlorate Salts	RfD	2005
Phosgene	RfC	2006
Propylene glycol monomethyl ether (PGME)	RfC	1991
2,3,7,8-Tetrachlorodibenzo-p-dioxin	RfD	2012
Toluene	RfC	2005

1,1,1-Trichloroethane (Acute)	RfC	2007
1,1,1-Trichloroethane (Short-term)	RfC	2007
Trichloroethylene (adult immunological effects)	RfD	2011
Trichloroethylene (adult immunological effects)	RfC	2011
Trichloroethylene (developmental immunotoxicity)	RfD	2011
Trichloroethylene (heart malformations)	RfD	2011
Trichloroethylene (heart malformations)	RfC	2011
Vinyl chloride	RfD	2000
Vinyl chloride	RfC	2000
Zinc and Compounds	RfD	2005

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Substance	Type	Date
Acephate	RfD	1989
Acetochlor	RfD	1993
Alachlor	RfD	1993
Ally	RfD	1988
Amdro	RfD	1987
Apollo	RfD	1991
Assure	RfD	1991
Atrazine	RfD	1993
Avermectin B1	RfD	1989
Bayleton	RfD	1988
Baythroid	RfD	1988
Benomyl	RfD	1987
Biphenthrin	RfD	1988
Bisphenol A.	RfD	1988
Boron and Compounds	RfD	2004
Bromomethane	RfC	1992
Butylate	RfD	1994
Cadmium (water)	RfD	1991
Cadmium (food)	RfD	1991
Caprolactam	RfD	1994
Captafol	RfD	1987
Captan	RfD	1989
Carbofuran	RfD	1987
Carbosulfan	RfD	1987
Carboxin	RfD	1987
Chlorine dioxide	RfD	2000
Chlorite (sodium salt)	RfD	2000
Chlorsulfuron	RfD	1987
Cyclohexylamine	RfD	1988
Cyhalothrin/Karate	RfD	1988
Cypermethrin	RfD	1989

Dacthal	RfD	1994
Danitol	RfD	1994
Dicamba	RfD	1988
Diflubenzuron	RfD	1987
Dimethipin	RfD	1988
2,4-Dinitrotoluene	RfD	1992
Ethylene glycol	RfD	1987
Express	RfD	1989
Fenamiphos	RfD	1987
Fluorine (soluble fluoride)	RfD	1987
Fluridone	RfD	1987
Flurprimidol	RfD	1989
Fluvalinate	RfD	1988
Folpet	RfD	1988
Fosetyl-al	RfD	1988
Glyphosate	RfD	1989
Haloxypop-methyl	RfD	1990
Harmony	RfD	1988
Hexachlorobenzene	RfD	1991
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	RfD	1990
Imazaquin	RfD	1987
Iprodione	RfD	1988
Isoxaben	RfD	1991
Lactofen	RfD	1988
Linuron	RfD	1989
Londax	RfD	1988
Mercuric chloride (HgCl ₂)	RfD	1995
Metalaxyl	RfD	1987
Methidathion	RfD	1989
Methomyl	RfD	1987
Metolachlor	RfD	1990
Nitrate	RfD	1991
Nitrite	RfD	1987
Norflurazon	RfD	1987
Oryzalin	RfD	1989
Oxyfluorfen	RfD	1987
Paraquat	RfD	1988
Permethrin	RfD	1987
Phosmet	RfD	1987
Pirimiphos-methyl	RfD	1987
Prochloraz	RfD	1989
Propiconazole	RfD	1988
Pursuit	RfD	1990
Pydrin	RfD	1987
Resmethrin	RfD	1988
Savey	RfD	1988
Selenious acid	RfD	1991

Selenium and Compounds	RfD	1991
Sethoxydim	RfD	1989
Simazine	RfD	1993
Systhane	RfD	1988
Tebuthiuron	RfD	1988
Terbutryn	RfD	1988
Thiophanate-methyl	RfD	1988
Tralomethrin	RfD	1989
Triallate	RfD	1990
Triasulfuron	RfD	1991
Tributyltin oxide (TBTO)	RfD	1997
Tridiphane	RfD	1987
Trifluralin	RfD	1989
Vinclozolin	RfD	1987
Vinyl acetate	RfC	1990

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ith $UF_D = 1$; further review required

Substance	Type	Date
Acifluorfen, sodium	RfD	1987
Acrylic acid	RfC	1994
Alar	RfD	1988
Aldicarb	RfD	1993
Aldicarb sulfone	RfD	1993
Aldrin	RfD	1991
Aluminum phosphide	RfD	1987
Amitraz	RfD	1988
Aroclor 1254	RfD	1994
Asulam	RfD	1988
Baygon	RfD	1987
Benefin	RfD	1987
Benzidine	RfD	1991
Benzoic acid	RfD	1991
Bromoform	RfD	1993
Bromomethane	RfD	1992
Carbaryl	RfD	1991
Carbon disulfide	RfD	1995
Chloramben	RfD	1987
Chlorine cyanide	RfD	1987
Chlorobenzene	RfD	1990
Chlorothalonil	RfD	1988
Copper cyanide	RfD	1988
Cyanogen bromide	RfD	1988
Cyclohexanone	RfD	1987
Di (2-ethylhexyl)phthalate (DEHP)	RfD	1988

Dibromochloromethane	RfD	1992
1,4-Dichlorobenzene	RfC	1994
Dichlorodifluoromethane	RfD	1988
p,p'-Dichlorodiphenyltrichloroethane (DDT)	RfD	1988
2,4-Dichlorophenoxyacetic acid (2,4-D)	RfD	1987
1,2-Dichloropropane	RfC	1991
Dichlorvos	RfD	1994
Dieldrin	RfD	1991
Diphenamid	RfD	1987
Diphenylamine	RfD	1987
Diquat	RfD	1987
Disulfoton	RfD	1987
Endosulfan	RfD	1994
Endothall	RfD	1987
Endrin	RfD	1989
Ethephon	RfD	1988
Ethion	RfD	1989
S-Ethyl dipropylthiocarbamate (EPTC)	RfD	1987
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)	RfD	1987
Flutolanil	RfD	1989
Fonofos	RfD	1987
Formaldehyde	RfD	1991
Glufosinate-ammonium	RfD	1987
Heptachlor epoxide	RfD	1991
gamma-Hexachlorocyclohexane (gamma-HCH)	RfD	1988
Hexachlorophene	RfD	1988
Imazalil	RfD	1987
Malathion	RfD	1987
Maleic anhydride	RfD	1988
Maleic hydrazide	RfD	1987
Manganese	RfD	1995
Methamidophos	RfD	1987
Methyl parathion	RfD	1987
2-Methylphenol	RfD	1992
3-Methylphenol	RfD	1992
Metribuzin	RfD	1993
Molybdenum	RfD	1992
Naled	RfD	1987
Oxadiazon	RfD	1987
Oxamyl	RfD	1987
Paclobutrazol	RfD	1987
Phenmedipham	RfD	1990
Phosphine	RfD	1995
Phosphoric acid	RfC	1995
Phthalic anhydride	RfD	1988
Picloram	RfD	1987
Pronamide	RfD	1987

Propargite (maternal and feto- toxicity)	RfD	1990
Propylene oxide	RfC	1991
Pyridine	RfD	1987
Quinalphos	RfD	1987
Rotenone	RfD	1988
Sodium azide	RfD	1987
Sodium diethyldithiocarbamate	RfD	1988
Styrene	RfD	1992
Terbacil	RfD	1987
2,3,4,6-Tetrachlorophenol	RfD	1988
Tetrachlorovinphos	RfD	1987
Tetraethyl lead	RfD	1987
Thiobencarb	RfD	1987
1,2,4-Trichlorobenzene	RfD	1992
1,1,2-Trichloroethane	RfD	1991
Trichlorofluoromethane	RfD	1987
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	RfD	1988
1,3,5-Trinitrobenzene	RfD	1997
2,4,6-Trinitrotoluene (TNT)	RfD	1989
Uranium, soluble salts	RfD	1989
Zinc cyanide	RfD	1987
Zineb	RfD	1987

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; further review required

Substance	Type	Date
Allyl alcohol	RfD	1988
Ametryn	RfD	1987
Antimony	RfD	1991
Benzaldehyde	RfD	1988
1,1-Biphenyl	RfD	1991
n-Butanol	RfD	1991
Butyl benzyl phthalate	RfD	1989
2-Chlorophenol	RfD	1988
o-Chlorotoluene	RfD	1990
Chromium(III), insoluble salts	RfD	1988
Chromium(VI) - oral	RfD	1998
Demeton	RfD	1987
1,4-Dibromobenzene	RfD	1987
2,4-Dichlorophenol	RfD	1988
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	RfD	1987
Diethyl phthalate	RfD	1988
Diisopropyl methylphosphonate (DIMP)	RfD	1989
Dimethyl terephthalate (DMT)	RfD	1987
N-N-Dimethylaniline	RfD	1987

2,6-Dimethylphenol	RfD	1988
3,4-Dimethylphenol	RfD	1988
4,6-Dinitro-o-cyclohexyl phenol	RfD	1988
2,4-Dinitrophenol	RfD	1991
Dinoseb	RfD	1989
Ethyl acetate	RfD	1987
Ethylbenzene	RfD	1991
Ethylphthalyl ethylglycolate (EPEG)	RfD	1987
Furan	RfD	1987
Furfural	RfD	1988
Hexabromobenzene	RfD	1988
Isobutyl alcohol	RfD	1987
Isophorone	RfD	1992
Isopropalin	RfD	1987
Maneb	RfD	1988
Methanol	RfD	1988
Octabromodiphenyl ether	RfD	1990
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	RfD	1989
Pentabromodiphenyl ether	RfD	1990
Pentachlorobenzene	RfD	1992
m-Phenylenediamine	RfD	1987
Phenylmercuric acetate	RfD	1987
Prometon	RfD	1988
Propachlor	RfD	1987
Silver	RfD	1991
Silver cyanide	RfD	1987
Strychnine	RfD	1987
1,2,4,5-Tetrachlorobenzene	RfD	1988
Tetraethyldithiopyrophosphate	RfD	1988
1,2,4-Tribromobenzene	RfD	1987
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	RfD	1988
2,4,5-Trichlorophenol	RfD	1991
Vanadium pentoxide	RfD	1988
Vernam	RfD	1987
Warfarin	RfD	1987
Zinc phosphide	RfD	1988
Chromium(VI) - inhalation/acid mists and aerosols	RfC	1998

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Substance	Type	Date
Chromium(VI) - inhalation/particulates	RfC	1998

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Substance	Type	Date
Dibutyl phthalate	RfD	1990
2,3-Dichloropropanol	RfD	1990
2,4-Dimethylphenol	RfD	1990

3

[illegible]

[illegible]

Comment
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-D
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-D
Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-D

Spreadsheet Codes

Input Comments

	Intraspecies			Interspecies			LtoN			SubC	
	Name	Date	Comment	Name	Date	Comment	Name	Date	Comment	Name	Date
RfD	2	3	7	2	3	10	2	3	13	2	3
RfC	25	3	29	25	3	32	25	3	35	25	3

Comment Codes

Master List Code	Comment Description
Cross-sectional	POD based on many cross-sections of human populations
Human exposure	POD based on epidemiological or other type of human study
N as POD	An NOAEL/NOEL was used as the POD
BMR	Effect-level addressed as consideration in selecting a BMR for BMD/BMC modeling
BMR post-03	Benchmark modeling used, post-EPA policy regarding no need for UF-L (see Table 3C)
Other UF	Benchmark modeling used; "other" UF used to capture effect-level considerations
LtoN v SubC	Info in summary suggests that UF discussion is incorrect, UF-L should be 10
BMR pre-03	Benchmark modeling used, pre-EPA policy regarding no need for UFL (see Table 3C)
LOAEL	POD is an LOAEL, but Summary does not address UF for effect-level extrapolation
BMR 03	Benchmark modeling used, transitional period re: need for UFL (see Table 3C)
high DB conf	Summary concludes high confidence in database used to derive RfD/RfC
med DB conf	Summary concludes medium confidence in database used to derive RfD/RfC
low DB conf	Summary concludes low confidence in database used to derive RfD/RfC
lo/md DB conf	Summary concludes low-to-medium confidence in database used to derive RfD/RfC
Comb v Sep	Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-D
DB conf unsp	Summary does not specify confidence in database used to derive RfD/RfC
Dur not factor	Information suggests duration of exposure not likely to be factor in toxicological outcomes
Chron study/CE	POD based on chronic study where a critical effect is associated with lifetime exposure
Lifestage effect	POD associated with a specific lifestage effect, including maternal/developmental toxicity
<Chron RfV	Reference value applies to less than chronic exposure; UF-S not applicable
Rep/Mat/Dev	Unclear whether should be characterized as reproductive, maternal or development toxicity
Subchron	POD for chronic RfV is based on subchronic exposure, but Summary does not address UF-S
Unk duration	Summary does not describe duration of study used to derive the POD
SubC v LtoN	Info in summary suggests that UF discussion is incorrect, UF-S should be 1 (not 10)
Comb w DB	Info in Summary suggests the use of a combined UF-S and UF-D vs. a separate UF-S

hr	Database		
Comment	Name	Date	Comment
18	2	3	22
40	25	3	44

y

SUBSTANCE_NAME	EXP_DOSE_TYPE_NAME
Acrylamide	BMDL
Acrylamide	BMDL
Antimony trioxide	BMC
Barium and Compounds	BMDL
Benzene	BMDL
Benzene	BMCL
Beryllium and compounds	BMD
Boron and Compounds	BMDL
Bromobenzene	BMCL
Bromobenzene	BMDL
Butadiene	BMCL
Carbon disulfide	BMC
Carbon tetrachloride	BMCL
Carbon tetrachloride	BMD
Cerium Oxide and Cerium Compounds	BMCL
Chlordecone (Kepone)	BMDL
Chloroform	BMDL
Chloroprene	BMDL
Chromium(VI)	BMC
Cyclohexane	BMCL
Dibromoethane	BMCL
Dichloroethylene	BMDL
Dichloroethylene	BMDL
Dichloroethylene (1,1-DCE)	BMDL
Dichloroethylene (1,1-DCE)	BMCL
Dichloromethane	BMDL
Dichloromethane	BMDL
Dichloropropene	BMDL
Dichloropropene	BMCL
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	BMCL
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	BMDL
Hexachlorocyclopentadiene (HCCPD)	BMDL
Hexachloroethane	BMDL
Hexane	BMCL
Hexanone	BMDL
Hexanone	BMCL
Hydrogen Cyanide and Cyanide Salts	BMDL
Methyl ethyl ketone (MEK)	LEC
Methyl ethyl ketone (MEK)	LED
Methyl methacrylate	BMC
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	BMC
Methylmercury (MeHg)	BMDL
Methylmercury (MeHg)	BMDL
Methylnaphthalene	BMD
Nitrobenzene	BMCL
Nitrobenzene	BMDL

Pentabromodiphenyl ether (BDE-99)	BMDL
Phenol	BMDL
Phosgene	BMDL
Phosphoric acid	BMC
Propionaldehyde	BMCL
Tetrabromodiphenyl ether (BDE-47)	BMDL
Tetrachloroethane	BMDL
Tetrafluoroethane	BMC
Tetrahydrofuran	BMCL
Tetrahydrofuran	BMDL
Toluene	BMDL
Tributyltin oxide (TBTO)	BMD
Trichloroacetic acid	BMDL
Trichloroethane	BMDL
Trichloroethylene	BMDL
Trichloroethylene	BMDL
Trichloropropane	BMCL
Trichloropropane	BMDL

IRIS_SUB_ID	SUBSTANCE_NMBR
601	442
603	443
597	354
597	354
593	290
42	521
43	128
8	205
8	205
45	321
47	518
49	192
65	364
65	364
67	286
67	286
70	2
70	2
71	206
99	515
100	129
101	287
104	3
105	312
106	130
109	288
111	4
112	387
114	5
115	207
122	208
125	440
127	334
134	422
139	517
142	516
842	1007
144	7
150	350
156	610
158	434
165	6
167	676
170	8
196	473
201	462

207	649
208	389
216	278
221	672
232	371
233	335
237	284
238	209
243	381
246	351
248	10
254	9
265	210
275	131
276	132
277	133
279	11
280	134
281	454
283	332
9	276
9	276
285	135
5	136
292	453
294	461
295	452
296	355
297	388
298	393
1	12
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372	211
373	333
374	13
376	407
375	522
381	137
379	375
382	356
383	410
608	1002
384	514
850	1020
850	1020
850	1020
850	1020

385	532
392	213
400	490
402	214
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424	533
427	289
428	138
429	139
430	140
431	293
432	215
433	417
434	16
435	587
436	141
436	141
437	17
11	357
438	216
439	18
442	19
443	218
445	217
445	217
446	20
446	20
449	617
451	21
452	22
1431	1018
453	304
454	23
455	142
455	142
915	1017
456	406
457	405
458	24
459	496
459	496
460	648
461	661
462	537
483	320
484	399

485	400
492	415
493	416
495	430
498	657
299	25
499	245
580	463
500	303
501	623
502	624
503	625
861	1021
506	143
509	412
511	283
3	26
513	27
514	28
6	144
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6	144
515	455
516	395
519	368
521	29
522	360
523	464
524	306
524	306
525	145
526	31
527	32
527	32
528	358
619	1005
529	219
530	319
531	279
532	380
533	220
534	221
538	146
541	34
542	35
545	36
550	536

551	616
552	456
554	429
555	414
556	148
557	222
558	535
560	491
561	361
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561	361
564	38
563	223
562	654
565	408
567	552
566	447
568	504
569	40
570	347
595	328
7	147
589	149
599	409
594	314
600	418
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577	39
584	70
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579	41
578	33
590	150
605	601
602	465
55	224
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39	151
39	151
54	324
48	225
56	642
68	226
80	615
76	613
77	643
547	420

549	14
79	336
78	227
82	665
87	310
90	43
96	44
97	353
121	365
124	46
128	228
130	229
131	538
132	511
133	466
146	231
145	230
148	322
162	633
161	318
163	152
168	524
166	397
177	47
175	326
179	232
180	48
174	49
181	153
184	154
182	531
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188	234
189	235
192	155
193	363
206	50
204	630
200	297
199	156
211	513
215	157
213	629
212	523
218	237
219	423
222	236

223	51
223	51
226	528
227	238
220	500
220	500
897	1025
228	239
229	631
230	52
231	379
250	240
251	241
253	444
255	435
257	53
260	54
261	383
262	394
263	281
264	242
266	348
267	158
269	419
272	55
273	159
300	56
301	317
302	362
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312	337
313	243
314	160
315	607
316	161
317	494
318	374
319	58
320	162
321	244
322	163
325	164
326	65
327	165

611	59
611	59
332	166
333	167
333	167
335	338
349	313
351	638
352	486
1464	1019
1464	1019
355	246
357	352
359	396
364	60
364	60
363	61
362	508
365	168
366	62
367	457
368	291
369	169
582	63
583	64
604	530
596	339
609	280
69	277
50	682
46	170
73	171
75	248
81	307
85	172
89	249
92	373
92	373
108	340
110	692
113	370
116	366
118	367
129	68
137	359
140	250
143	305

169	341
173	69
176	369
581	525
178	441
613	1003
183	309
185	71
185	71
190	173
203	527
205	1000
205	1000
194	174
195	545
210	325
209	67
214	66
225	529
217	386
191	73
191	73
620	1006
241	302
239	300
240	301
242	74
247	75
252	251
256	298
258	425
259	644
249	175
14	436
14	436
268	384
270	274
271	272
304	273
306	271
309	176
310	76
323	77
324	78
328	79
328	79
328	79

330	80
331	402
334	484
336	519
339	179
337	37
340	177
341	252
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343	45
344	178
345	81
347	495
348	82
350	299
353	180
354	311
356	83
358	253
360	181
361	84
386	182
387	183
388	327
389	292
390	184
391	85
393	431
394	254
395	86
396	683
397	185
398	459
399	477
403	88
405	87
406	89
426	255
440	487
441	91
448	90
448	90
444	697
450	308
447	256
465	257
10	294

467	92
585	93
598	378
586	94
592	258
587	95
588	96
591	186
53	296
53	296
66	468
72	187
74	260
83	282
371	542
940	1011
86	543
88	544
91	404
287	403
93	621
94	439
95	188
286	445
102	261
103	189
615	1004
117	509
119	295
120	275
123	647
126	343
135	344
138	345
141	97
149	472
153	458
152	98
151	190
154	99
155	100
157	263
159	191
160	101
164	102
171	469
172	550

282	103
284	104
284	104
245	342
289	264
288	105
290	285
377	493
378	107
407	432
416	265
408	193
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409	106
410	108
415	194
414	109
413	330
412	656
949	1012
418	111
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420	113
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425	117
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466	118
466	118
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477	195
474	510
473	196
472	534
471	492
496	349
475	123
494	655
491	119

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497	198
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487	199
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487	199
486	120
468	121
469	122
470	323
476	262
480	200
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479	372
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505	124
507	520
508	639
510	640
512	268
517	614
518	316
520	269
535	259
13	421
536	125
539	201
543	126
544	512
546	671
548	1001
548	1001
553	202
573	460
574	270
574	270
575	426
576	127
571	203
572	204
2393	1008

2387
2391

1010
1009

Lookup Code
Acenaphthene-RFD
Acenaphthylene-
Acephate-RFC
Acephate-RFD
Acetaldehyde-RFC
Acetochlor-RFD
Acetone-RFD
Acetonitrile-RFD
Acetonitrile-RFC
Acetophenone-RFD
Acetyl chloride-
Acifluorfen, sodium-RFD
Acrolein-RFC
Acrolein-RFD
Acrylamide-RFD
Acrylamide-RFC
Acrylic acid-RFC
Acrylic acid-RFD
Acrylonitrile-RFC
Adiponitrile-
Alachlor-RFD
Alar-RFD
Aldicarb-RFD
Aldicarb sulfone-RFD
Aldrin-RFD
Ally-RFD
Allyl alcohol-RFD
Allyl chloride-RFC
Aluminum phosphide-RFD
Amdro-RFD
Ametryn-RFD
Aminopyridine-
Amitraz-RFD
Ammonia-RFC
Ammonium acetate-
Ammonium methacrylate-
Perchlorate (ClO₄) and Perchlorate Salts-RFD
Ammonium sulfamate-RFD
Aniline-RFC
Anisidine-
Anthracene-RFD
Antimony-RFD
Antimony trioxide-RFC
Apollo-RFD
Aramite-
Aroclor 1016-RFD

Aroclor 1248-
Aroclor 1254-RFD
Arsenic, inorganic-RFD
Arsine-RFC
Asbestos-
Assure-RFD
Asulam-RFD
Atrazine-RFD
Avermectin B1-RFD
Azobenzene-
Barium and Compounds-RFD
Barium cyanide-
Baygon-RFD
Bayleton-RFD
Baythroid-RFD
Benefin-RFD
Benomyl-RFD
Bentazon (Basagran)-RFD
Benz[a]anthracene-
Benzaldehyde-RFD
Benzene-RFD
Benzene-RFC
Benzidine-RFD
Benzo[a]pyrene (BaP)-
Benzo[b]fluoranthene-
Benzo[g,h,i]perylene-
Benzo[k]fluoranthene-
Benzoic acid-RFD
Benzotrichloride-
Benzyl chloride-
Beryllium and compounds-RFD
Beryllium and compounds-RFC
Bidrin-RFD
Biphenthrin-RFD
1,1-Biphenyl-RFD
Bis(2-chloro-1-methylethyl) ether-RFD
Bis(2-chloroethoxy)methane-
Bis(chloroethyl)ether (BCEE)-
Bis(chloromethyl)ether (BCME)-
Bisphenol A.-RFD
Boron and Compounds-RFD
Bromate-RFD
Brominated dibenzofurans-
Bromobenzene (subchronic)-RFC
Bromobenzene (subchronic)-RFD
Bromobenzene (chronic)-RFC
Bromobenzene (chronic)-RFD

Bromochloromethane-
Bromodichloromethane-RFD
Bromodiphenyl ether-
Bromoform-RFD
Bromomethane-RFC
Bromomethane-RFD
Bromotrichloromethane-
Bromoxynil-RFD
Bromoxynil octanoate-RFD
1,3-Butadiene-RFC
n-Butanol-RFD
Butyl benzyl phthalate-RFD
Butylate-RFD
Butylchloride-
Butylphthalyl butylglycolate (BPBG)-RFD
Cacodylic acid-
Cadmium (water)-RFD
Cadmium (food)-RFD
Calcium cyanide-RFD
Caprolactam-RFD
Captan-RFD
Carbaryl-RFD
Carbofuran-RFD
Carbon disulfide-RFC
Carbon disulfide-RFD
Carbon tetrachloride-RFD
Carbon tetrachloride-RFC
Carbonyl sulfide-
Carbosulfan-RFD
Carboxin-RFD
Cerium Oxide and Cerium Compounds-RFC
Chloral hydrate-RFD
Chloramben-RFD
Chlordane (Technical)-RFD
Chlordane (Technical)-RFC
Chlordecone (Kepone)-RFD
Chlorimuron-ethyl-RFD
Chlorine-RFD
Chlorine cyanide-RFD
Chlorine dioxide-RFC
Chlorine dioxide-RFD
Chlorite (sodium salt)-RFD
1-Chloro-1,1-difluoroethane-RFC
2-Chloroacetophenone-RFC
p-Chloroaniline-RFD
Chlorobenzene-RFD

Chlorobenzilate-RFD
Chlorobutane-
Chlorobutane-
Chlorocyclopentadiene-
Chlorodifluoromethane-RFC
Chloroform-RFD
Chloromethyl methyl ether (CMME)-
beta-Chloronaphthalene-RFD
2-Chlorophenol-RFD
Chlorophenyl methyl sulfide-
Chlorophenyl methyl sulfone-
Chlorophenyl methyl sulfoxide-
Chloroprene-RFC
Chlorothalonil-RFD
o-Chlorotoluene-RFD
Chlorpropham-RFD
Chlorpyrifos-
Chlorsulfuron-RFD
Chromium(III), insoluble salts-RFD
Chromium(VI) - oral-RFD
Chromium(VI)-RFC
Chromium(VI)-RFC
Chrysene-
Coke oven emissions-
Copper-
Copper cyanide-RFD
Creosote-
Crotonaldehyde-
Cumene-RFD
Cumene-RFC
Cyanazine-
Cyanide, free-RFD
Cyanogen-RFC
Cyanogen-RFD
Cyanogen bromide-RFD
Cyclohexane-RFC
Cyclohexanone-RFD
Cyclohexylamine-RFD
Cyhalothrin/Karate-RFD
Cypermethrin-RFD
Cyromazine-RFD
Dacthal-RFD
Dalapon, sodium salt-RFD
Danitol-RFD
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)-RFD
Demeton-RFD
Diaminotoluene-

Diazomethane-
Dibenz[a,h]anthracene-
Dibenzofuran-
Dibromo-3-chloropropane (DBCP)-RFC
1,4-Dibromobenzene-RFD
Dibromochloromethane-RFD
Dibromodichloromethane-
Dibromodiphenyl ether-
1,2-Dibromoethane-RFC
1,2-Dibromoethane-RFC
1,2-Dibromoethane-RFD
Dibutyl phthalate-RFD
Dicamba-RFD
Dichloroacetic acid-RFD
1,2-Dichlorobenzene-RFD
1,2-Dichlorobenzene-RFC
1,2-Dichlorobenzene-
Dichlorobenzidine-
Dichlorodifluoromethane-RFD
Dichlorodiphenyl dichloroethane (DDD)-
Dichlorodiphenyldichloroethylene (DDE)-
p,p'-Dichlorodiphenyltrichloroethane (DDT)-RFD
Dichloroethane-
Dichloroethane-
cis-1,2-Dichloroethylene-RFD
trans-1,2-Dichloroethylene-RFD
1,1-Dichloroethylene (1,1-DCE)-RFC
1,1-Dichloroethylene (1,1-DCE)-RFD
Dichloromethane-RFD
Dichloromethane-RFC
2,4-Dichlorophenol-RFD
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)-RFD
2,4-Dichlorophenoxyacetic acid (2,4-D)-RFD
Dichloropropane-RFC
2,3-Dichloropropanol-RFD
1,3-Dichloropropene-RFD
1,3-Dichloropropene-RFC
Dichlorvos-RFD
Dichlorvos-RFC
Dicofol-
Dieldrin-RFD
Diesel engine exhaust-RFC
Diethyl phthalate-RFD
Diethyl sulfate-
Diethyl-p-nitrophenylphosphate-
Diethylene glycol dinitrate (DEGDN)-
Di(2-ethylhexyl)adipate-RFD

Di (2-ethylhexyl)phthalate (DEHP)-RFD
Difenzoquat-RFD
Diflubenzuron-RFD
1,1-Difluoroethane-RFC
Diisopropyl methylphosphonate (DIMP)-RFD
Dimethipin-RFD
Dimethoate-RFD
Dimethyl phthalate-
Dimethyl sulfate-
Dimethyl terephthalate (DMT)-RFD
Dimethylamine-
N-N-Dimethylaniline-RFD
Dimethylbenzidine-
Dimethylformamide-RFC
2,4-Dimethylphenol-RFD
2,6-Dimethylphenol-RFD
3,4-Dimethylphenol-RFD
4,6-Dinitro-o-cyclohexyl phenol-RFD
m-Dinitrobenzene-
m-Dinitrobenzene-RFD
2,4-Dinitrophenol-RFD
2,4-Dinitrotoluene-RFD
Dinitrotoluene mixture-
Dinoseb-RFD
1,4-Dioxane-RFD
Diphenamid-RFD
Diphenylamine-RFD
Diphenylhydrazine-
Diquat-RFD
Disulfoton-RFD
1,4-Dithiane-RFD
Diuron-RFD
Dodine-RFD
Endosulfan-RFD
Endothall-RFD
Endrin-RFD
Epichlorohydrin-RFC
1,2-Epoxybutane (EBU)-RFC
Ethephon-RFD
Ethion-RFD
2-Ethoxyethanol-RFC
Ethyl acetate-RFD
Ethyl carbamate-
Ethyl chloride-RFC
S-Ethyl dipropylthiocarbamate (EPTC)-RFD
Ethyl ether-RFD
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)-RFD

Ethylbenzene-RFC
Ethylbenzene-RFD
Ethylene diamine-
Ethylene glycol-RFD
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)-RFD
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)-RFC
Ethylene oxide-
Ethylene thiourea (ETU)-RFD
Ethyleneimine-
Ethylphthalyl ethylglycolate (EPEG)-RFD
Express-RFD
Fenamiphos-RFD
Fluometuron-RFD
Fluoranthene-RFD
Fluorene-RFD
Fluorine (soluble fluoride)-RFD
Fluridone-RFD
Flurprimidol-RFD
Flutolanil-RFD
Fluvalinate-RFD
Folpet-RFD
Fomesafen-
Fonofos-RFD
Formaldehyde-RFD
Formic acid-
Fosetyl-al-RFD
Furan-RFD
Furfural-RFD
Furmecyclo-
Glufosinate-ammonium-RFD
Glycidaldehyde-RFD
Glyphosate-RFD
Haloxyp-methyl-RFD
Harmony-RFD
Heptachlor-RFD
Heptachlor epoxide-RFD
Heptane-
Hexabromobenzene-RFD
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)-
Hexachlorobenzene-RFD
Hexachlorobutadiene-
Hexachlorocyclohexane (alpha-HCH)-
Hexachlorocyclohexane (beta-HCH)-
Hexachlorocyclohexane (delta-HCH)-
Hexachlorocyclohexane (epsilon-HC)-
Hexachlorocyclohexane (gamma-HCH)-RFD
Hexachlorocyclohexane (t-HCH)-

Hexachlorocyclopentadiene (HCCPD)-RFC
Hexachlorocyclopentadiene (HCCPD)-RFD
Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD-
Hexachloroethane-RFC
Hexachloroethane-RFD
Hexachlorophene-RFD
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)-RFD
1,6-Hexamethylene diisocyanate-RFC
Hexane-RFC
2-Hexanone-RFC
2-Hexanone-RFD
Hexazinone-RFD
Hydrazine/Hydrazine sulfate-
Hydrogen chloride-RFC
Hydrogen cyanide-RFC
Hydrogen cyanide-RFD
Hydrogen sulfide-RFC
Hydroquinone-
Imazalil-RFD
Imazaquin-RFD
Indeno[1,2,3-cd]pyrene-
Iprodione-RFD
Isobutyl alcohol-RFD
Isophorone-RFD
Isopropalin-RFD
Isopropyl methyl phosphonic acid (IMPA)-RFD
Isoxaben-RFD
Lactofen-RFD
Lead and compounds (inorganic)-
Limonene-
Linuron-RFD
Londax-RFD
Malathion-RFD
Maleic anhydride-RFD
Maleic hydrazide-RFD
Maneb-RFD
Manganese-RFD
Manganese-RFC
Mepiquat chloride-RFD
Mercuric chloride (HgCl₂)-RFD
Mercury, elemental-RFC
Merphos-RFD
Merphos oxide-RFD
Metalaxyl-RFD
Methacrylonitrile-RFD
Methamidophos-RFD
Methanol-RFD

Methidathion-RFD
Methomyl-RFD
Methoxychlor-RFD
Methoxyethanol-RFC
Methyl acrylate-
Methyl chloride-RFC
Methyl chlorocarbonate-
Methyl ethyl ketone (MEK)-RFC
Methyl ethyl ketone (MEK)-RFD
Methyl isobutyl ketone (MIBK)-RFC
Methyl isocyanate-
Methyl methacrylate-RFD
Methyl methacrylate-RFC
Methyl parathion-RFD
Methyl tert-butyl ether (MTBE)-RFC
Methyl-4-chlorophenoxy) butyric acid (MCPB)-RFD
Methyl-4-chlorophenoxy)propionic acid (MCPB)-RFD
2-Methyl-4-chlorophenoxyacetic acid (MCPA)-RFD
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)-RFC
Methylene bis(N,N'-dimethyl)aniline-
Methylmercury (MeHg)-RFD
Methylmercury (MeHg)-RFD
2-Methylnaphthalene-RFD
Methylphenol-
Methylphenol-RFD
Methylphenol-RFD
Metolachlor-RFD
Metribuzin-RFD
Mirex-RFD
Molinate-RFD
Molybdenum-RFD
Monochloramine-RFD
Naled-RFD
Naphthalene-RFD
Naphthalene-RFC
Napropamide-RFD
Nickel carbonyl-
Nickel refinery dust-
Nickel subsulfide-
Nickel, soluble salts-RFD
Nitrapyrin-
Nitrate-RFD
Nitric oxide-
Nitrite-RFD
Nitrobenzene-RFC
Nitrobenzene-RFC
Nitrobenzene-RFD

Nitrogen dioxide-
Nitroguanidine-RFD
Nitrophenol-
2-Nitropropane-RFC
Nitroso-N-methylethylamine-
Nitroso-di-n-butylamine-
Nitrosodi-N-propylamine-
Nitrosodiethanolamine-
Nitrosodiethylamine-
Nitrosodimethylamine-
Nitrosodiphenylamine-
Nitrosopyrrolidine-
Nonabromodiphenyl ether-
Norflurazon-RFD
NuStar-RFD
Octabromodiphenyl ether-RFD
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)-RFD
Oryzalin-RFD
Oxadiazon-RFD
Oxamyl-RFD
Oxyfluorfen-RFD
Paclobutrazol-RFD
Paraquat-RFD
Parathion-
Pendimethalin-RFD
Pentabromodiphenyl ether-RFD
Pentachlorobenzene-RFD
Pentachlorocyclopentadiene-
Pentachloronitrobenzene (PCNB)-RFD
Pentachlorophenol-RFD
Pentafluoroethane-
Permethrin-RFD
Phenanthrene-
Phenmedipham-RFD
Phenol-RFD
Phenylenediamine-RFD
Phenylmercuric acetate-RFD
Phosalone-
Phosgene-RFC
Phosmet-RFD
Phosphine-RFD
Phosphine-RFC
Phosphoric acid-RFC
Phthalic anhydride-RFD
Picloram-RFD
Pirimiphos-methyl-RFD
Polychlorinated biphenyls (PCBs)-

Potassium cyanide-RFD
Potassium silver cyanide-RFD
Prochloraz-RFD
Prometon-RFD
Prometryn-RFD
Pronamide-RFD
Propachlor-RFD
Propanil-RFD
Propargite (maternal and feto- toxicity)-RFD
Propargite (systemic effects)-RFD
Propargyl alcohol-RFD
Propazine-RFD
Propham-RFD
Propiconazole-RFD
Propiolactone-
Propionaldehyde-RFC
Propylene glycol-
Propylene glycol monoethyl ether-
Propylene glycol monomethyl ether (PGME)-RFC
Propylene oxide-RFC
Propyleneimine-
Pursuit-RFD
Pydrin-RFD
Pyrene-RFD
Pyridine-RFD
Quinalphos-RFD
Quinoline-
Quinone-
Radium 226,228-
Radon 222-
Refractory ceramic fibers-
Resmethrin-RFD
Rotenone-RFD
Savey-RFD
Selenious acid-RFD
Selenium and Compounds-RFD
Selenium sulfide-
Selenourea-
Sethoxydim-RFD
Silver-RFD
Silver cyanide-RFD
Simazine-RFD
Sodium azide-RFD
Sodium cyanide-RFD
Sodium diethyldithiocarbamate-RFD
Sodium fluoroacetate-RFD
Strontium-RFD

Strychnine-RFD
Styrene-RFD
Styrene-RFC
Systhane-RFD
Tebuthiuron-RFD
Terbacil-RFD
Terbutryn-RFD
Tetrabromodiphenyl ether-
Tetrachlorobenzene-RFD
Tetrachlorocyclopentadiene-
1,1,1,2-Tetrachloroethane-RFD
1,1,2,2-Tetrachloroethane (subchronic)-RFD
Tetrachloroethylene-RFD
Tetrachloroethylene-RFC
Tetrachloroethylene-RFC
Tetrachloroethylene-RFD
Tetrachlorophenol-RFD
Tetrachlorovinphos-RFD
Tetraethyl lead-RFD
Tetraethyldithiopyrophosphate-RFD
Tetrafluoroethane-RFC
Tetrahydrofuran-RFC
Thallium (I), soluble salts-
Thallium acetate-
Thallium carbonate-
Thallium chloride-
Thallium nitrate-
Thallium oxide-
Thallium selenite-
Thallium(I) sulfate-
Thiobencarb-RFD
Thiophanate-methyl-RFD
Thiram-RFD
Toluene-RFD
Toluene-RFC
Toluene diisocyanate mixture (TDI)-RFC
Toxaphene-
Tralomeethrin-RFD
Triallate-RFD
Triasulfuron-RFD
Tribromobenzene-RFD
Tribromochloromethane-
Tribromodiphenyl ether-
Tributyltin oxide (TBTO)-RFD
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)-RFD
Trichloroacetic acid-RFD
Trichlorobenzene-RFD

Trichlorocyclopentadiene-
1,1,1-Trichloroethane-RFD
1,1,1-Trichloroethane (chronic)-RFC
1,1,1-Trichloroethane (Subchronic)-RFD
1,1,1-Trichloroethane (acute)-RFC
1,1,1-Trichloroethane (short-term)-RFC
1,1,1-Trichloroethane (Subchronic)-RFC
Trichloroethylene (developmental immunotoxicity)-RFD
Trichloroethylene (heart malformations)-RFC
Trichloroethylene (adult immunological effects)-RFD
Trichloroethylene (adult immunological effects)-RFC
Trichloroethylene (heart malformations)-RFD
Trichlorofluoromethane-RFD
Trichlorophenol-RFD
Trichlorophenol-
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)-RFD
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)-RFD
Trichloropropane-RFC
1,2,3-Trichloropropane-RFD
Trichloropropane-RFD
Tricresol-
Tridiphenyl-RFD
Triethylamine-RFC
Triethylene glycol monobutyl ether-
Triethylene glycol monoethyl ether-
Trifluralin-RFD
Trimethylpentane-
1,3,5-Trinitrobenzene-RFD
Trinitrotoluene (TNT)-RFD
Uranium, natural-
Uranium, soluble salts-RFD
Vanadium pentoxide-RFD
Vernam-RFD
Vinclozolin-RFD
Vinyl acetate-RFC
Vinyl bromide-RFC
Vinyl chloride-RFD
Vinyl chloride-RFC
Warfarin-RFD
White phosphorus-RFD
Xylenes-RFD
Xylenes-RFC
Zinc and Compounds-RFD
Zinc cyanide-RFD
Zinc phosphide-RFD
Zineb-RFD
Pentabromodiphenyl ether (BDE-99)-RFD

Tetrabromodiphenyl ether (BDE-47)-RFD
Hexabromodiphenyl ether (BDE-153)-RFD

SUBSTANCE_NAME

Acenaphthene
Acenaphthylene
Acephate
Acephate
Acetaldehyde
Acetochlor
Acetone
Acetonitrile
Acetonitrile
Acetophenone
Acetyl chloride
Acifluorfen, sodium
Acrolein
Acrolein
Acrylamide
Acrylamide
Acrylic acid
Acrylic acid
Acrylonitrile
Adiponitrile
Alachlor
Alar
Aldicarb
Aldicarb sulfone
Aldrin
Ally
Allyl alcohol
Allyl chloride
Aluminum phosphide
Amdro
Ametryn
Aminopyridine
Amitraz
Ammonia
Ammonium acetate
Ammonium methacrylate
Perchlorate (ClO₄) and Perchlorate Salts
Ammonium sulfamate
Aniline
Anisidine
Anthracene
Antimony
Antimony trioxide
Apollo
Aramite
Aroclor 1016

Aroclor 1248
Aroclor 1254
Arsenic, inorganic
Arsine
Asbestos
Assure
Asulam
Atrazine
Avermectin B1
Azobenzene
Barium and Compounds
Barium cyanide
Baygon
Bayleton
Baythroid
Benefin
Benomyl
Bentazon (Basagran)
Benz[a]anthracene
Benzaldehyde
Benzene
Benzene
Benzidine
Benzo[a]pyrene (BaP)
Benzo[b]fluoranthene
Benzo[g,h,i]perylene
Benzo[k]fluoranthene
Benzoic acid
Benzotrichloride
Benzyl chloride
Beryllium and compounds
Beryllium and compounds
Bidrin
Biphenthrin
1,1-Biphenyl
Bis(2-chloro-1-methylethyl) ether
Bis(2-chloroethoxy)methane
Bis(chloroethyl)ether (BCEE)
Bis(chloromethyl)ether (BCME)
Bisphenol A.
Boron and Compounds
Bromate
Brominated dibenzofurans
Bromobenzene (subchronic)
Bromobenzene (subchronic)
Bromobenzene (chronic)
Bromobenzene (chronic)

Bromochloromethane
Bromodichloromethane
Bromodiphenyl ether
Bromoform
Bromomethane
Bromomethane
Bromotrichloromethane
Bromoxynil
Bromoxynil octanoate
1,3-Butadiene
n-Butanol
Butyl benzyl phthalate
Butylate
Butylchloride
Butylphthalyl butylglycolate (BPBG)
Cacodylic acid
Cadmium (water)
Cadmium (food)
Calcium cyanide
Caprolactam
Captan
Captan
Carbaryl
Carbofuran
Carbon disulfide
Carbon disulfide
Carbon tetrachloride
Carbon tetrachloride
Carbonyl sulfide
Carbosulfan
Carboxin
Cerium Oxide and Cerium Compounds
Chloral hydrate
Chloramben
Chlordane (Technical)
Chlordane (Technical)
Chlordecone (Kepone)
Chlorimuron-ethyl
Chlorine
Chlorine cyanide
Chlorine dioxide
Chlorine dioxide
Chlorite (sodium salt)
1-Chloro-1,1-difluoroethane
2-Chloroacetophenone
p-Chloroaniline
Chlorobenzene

Chlorobenzilate
Chlorobutane
Chlorobutane
Chlorocyclopentadiene
Chlorodifluoromethane
Chloroform
Chloromethyl methyl ether (CMME)
beta-Chloronaphthalene
2-Chlorophenol
Chlorophenyl methyl sulfide
Chlorophenyl methyl sulfone
Chlorophenyl methyl sulfoxide
Chloroprene
Chlorothalonil
o-Chlorotoluene
Chlorpropham
Chlorpyrifos
Chlorsulfuron
Chromium(III), insoluble salts
Chromium(VI) - oral
Chromium(VI)
Chromium(VI)
Chrysene
Coke oven emissions
Copper
Copper cyanide
Creosote
Crotonaldehyde
Cumene
Cumene
Cyanazine
Cyanide, free
Cyanogen
Cyanogen
Cyanogen bromide
Cyclohexane
Cyclohexanone
Cyclohexylamine
Cyhalothrin/Karate
Cypermethrin
Cyromazine
Dacthal
Dalapon, sodium salt
Danitol
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE-209)
Demeton
Diaminotoluene

Diazomethane
Dibenz[a,h]anthracene
Dibenzofuran
Dibromo-3-chloropropane (DBCP)
1,4-Dibromobenzene
Dibromochloromethane
Dibromodichloromethane
Dibromodiphenyl ether
1,2-Dibromoethane
1,2-Dibromoethane
1,2-Dibromoethane
Dibutyl phthalate
Dicamba
Dichloroacetic acid
1,2-Dichlorobenzene
1,2-Dichlorobenzene
1,2-Dichlorobenzene
Dichlorobenzidine
Dichlorodifluoromethane
Dichlorodiphenyl dichloroethane (DDD)
Dichlorodiphenyldichloroethylene (DDE)
p,p'-Dichlorodiphenyltrichloroethane (DDT)
Dichloroethane
Dichloroethane
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
1,1-Dichloroethylene (1,1-DCE)
1,1-Dichloroethylene (1,1-DCE)
Dichloromethane
Dichloromethane
2,4-Dichlorophenol
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)
2,4-Dichlorophenoxyacetic acid (2,4-D)
Dichloropropane
2,3-Dichloropropanol
1,3-Dichloropropene
1,3-Dichloropropene
Dichlorvos
Dichlorvos
Dicofol
Dieldrin
Diesel engine exhaust
Diethyl phthalate
Diethyl sulfate
Diethyl-p-nitrophenylphosphate
Diethylene glycol dinitrate (DEGDN)
Di(2-ethylhexyl)adipate

Di (2-ethylhexyl)phthalate (DEHP)
Difenzoquat
Diflubenzuron
1,1-Difluoroethane
Diisopropyl methylphosphonate (DIMP)
Dimethipin
Dimethoate
Dimethyl phthalate
Dimethyl sulfate
Dimethyl terephthalate (DMT)
Dimethylamine
N-N-Dimethylaniline
Dimethylbenzidine
Dimethylformamide
2,4-Dimethylphenol
2,6-Dimethylphenol
3,4-Dimethylphenol
4,6-Dinitro-o-cyclohexyl phenol
m-Dinitrobenzene
m-Dinitrobenzene
2,4-Dinitrophenol
2,4-Dinitrotoluene
Dinitrotoluene mixture
Dinoseb
1,4-Dioxane
Diphenamid
Diphenylamine
Diphenylhydrazine
Diquat
Disulfoton
1,4-Dithiane
Diuron
Dodine
Endosulfan
Endothall
Endrin
Epichlorohydrin
1,2-Epoxybutane (EBU)
Ethephon
Ethion
2-Ethoxyethanol
Ethyl acetate
Ethyl carbamate
Ethyl chloride
S-Ethyl dipropylthiocarbamate (EPTC)
Ethyl ether
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)

Ethylbenzene
Ethylbenzene
Ethylene diamine
Ethylene glycol
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)
Ethylene oxide
Ethylene thiourea (ETU)
Ethyleneimine
Ethylphthalyl ethylglycolate (EPEG)
Express
Fenamiphos
Fluometuron
Fluoranthene
Fluorene
Fluorine (soluble fluoride)
Fluridone
Flurprimidol
Flutolanil
Fluvalinate
Folpet
Fomesafen
Fonofos
Formaldehyde
Formic acid
Fosetyl-al
Furan
Furfural
Furmecyclox
Glufosinate-ammonium
Glycidaldehyde
Glyphosate
Haloxypop-methyl
Harmony
Heptachlor
Heptachlor epoxide
Heptane
Hexabromobenzene
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclohexane (alpha-HCH)
Hexachlorocyclohexane (beta-HCH)
Hexachlorocyclohexane (delta-HCH)
Hexachlorocyclohexane (epsilon-HC)
Hexachlorocyclohexane (gamma-HCH)
Hexachlorocyclohexane (t-HCH)

Hexachlorocyclopentadiene (HCCPD)
Hexachlorocyclopentadiene (HCCPD)
Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD
Hexachloroethane
Hexachloroethane
Hexachlorophene
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
1,6-Hexamethylene diisocyanate
Hexane
2-Hexanone
2-Hexanone
Hexazinone
Hydrazine/Hydrazine sulfate
Hydrogen chloride
Hydrogen cyanide
Hydrogen cyanide
Hydrogen sulfide
Hydroquinone
Imazalil
Imazaquin
Indeno[1,2,3-cd]pyrene
Iprodione
Isobutyl alcohol
Isophorone
Isopropalin
Isopropyl methyl phosphonic acid (IMPA)
Isoxaben
Lactofen
Lead and compounds (inorganic)
Limonene
Linuron
Londax
Malathion
Maleic anhydride
Maleic hydrazide
Maneb
Manganese
Manganese
Mepiquat chloride
Mercuric chloride (HgCl₂)
Mercury, elemental
Merphos
Merphos oxide
Metalaxyl
Methacrylonitrile
Methamidophos
Methanol

Methidathion
Methomyl
Methoxychlor
Methoxyethanol
Methyl acrylate
Methyl chloride
Methyl chlorocarbonate
Methyl ethyl ketone (MEK)
Methyl ethyl ketone (MEK)
Methyl isobutyl ketone (MIBK)
Methyl isocyanate
Methyl methacrylate
Methyl methacrylate
Methyl parathion
Methyl tert-butyl ether (MTBE)
Methyl-4-chlorophenoxy) butyric acid (MCPB)
Methyl-4-chlorophenoxy)propionic acid (MCPBP)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)
Methylene bis(N,N'-dimethyl)aniline
Methylmercury (MeHg)
Methylmercury (MeHg)
2-Methylnaphthalene
Methylphenol
Methylphenol
Methylphenol
Metolachlor
Metribuzin
Mirex
Molinate
Molybdenum
Monochloramine
Naled
Naphthalene
Naphthalene
Napropamide
Nickel carbonyl
Nickel refinery dust
Nickel subsulfide
Nickel, soluble salts
Nitrapyrin
Nitrate
Nitric oxide
Nitrite
Nitrobenzene
Nitrobenzene
Nitrobenzene

Nitrogen dioxide
Nitroguanidine
Nitrophenol
2-Nitropropane
Nitroso-N-methylethylamine
Nitroso-di-n-butylamine
Nitrosodi-N-propylamine
Nitrosodiethanolamine
Nitrosodiethylamine
Nitrosodimethylamine
Nitrosodiphenylamine
Nitrosopyrrolidine
Nonabromodiphenyl ether
Norflurazon
NuStar
Octabromodiphenyl ether
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
Oryzalin
Oxadiazon
Oxamyl
Oxyfluorfen
Paclobutrazol
Paraquat
Parathion
Pendimethalin
Pentabromodiphenyl ether
Pentachlorobenzene
Pentachlorocyclopentadiene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Pentafluoroethane
Permethrin
Phenanthrene
Phenmedipham
Phenol
Phenylenediamine
Phenylmercuric acetate
Phosalone
Phosgene
Phosmet
Phosphine
Phosphine
Phosphoric acid
Phthalic anhydride
Picloram
Pirimiphos-methyl
Polychlorinated biphenyls (PCBs)

Potassium cyanide
Potassium silver cyanide
Prochloraz
Prometon
Prometryn
Pronamide
Propachlor
Propanil
Propargite (maternal and feto- toxicity)
Propargite (systemic effects)
Propargyl alcohol
Propazine
Propham
Propiconazole
Propiolactone
Propionaldehyde
Propylene glycol
Propylene glycol monoethyl ether
Propylene glycol monomethyl ether (PGME)
Propylene oxide
Propyleneimine
Pursuit
Pydrin
Pyrene
Pyridine
Quinalphos
Quinoline
Quinone
Radium 226,228
Radon 222
Refractory ceramic fibers
Resmethrin
Rotenone
Savey
Selenious acid
Selenium and Compounds
Selenium sulfide
Selenourea
Sethoxydim
Silver
Silver cyanide
Simazine
Sodium azide
Sodium cyanide
Sodium diethyldithiocarbamate
Sodium fluoroacetate
Strontium

Strychnine
Styrene
Styrene
Systhane
Tebuthiuron
Terbacil
Terbutryn
Tetrabromodiphenyl ether
Tetrachlorobenzene
Tetrachlorocyclopentadiene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane (subchronic)
Tetrachloroethylene
Tetrachloroethylene
Tetrachloroethylene
Tetrachloroethylene
Tetrachlorophenol
Tetrachlorovinphos
Tetraethyl lead
Tetraethyldithiopyrophosphate
Tetrafluoroethane
Tetrahydrofuran
Thallium (I), soluble salts
Thallium acetate
Thallium carbonate
Thallium chloride
Thallium nitrate
Thallium oxide
Thallium selenite
Thallium(I) sulfate
Thiobencarb
Thiophanate-methyl
Thiram
Toluene
Toluene
Toluene diisocyanate mixture (TDI)
Toxaphene
Tralomethrin
Triallate
Triasulfuron
Tribromobenzene
Tribromochloromethane
Tribromodiphenyl ether
Tributyltin oxide (TBTO)
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)
Trichloroacetic acid
Trichlorobenzene

Trichlorocyclopentadiene
1,1,1-Trichloroethane
1,1,1-Trichloroethane (chronic)
1,1,1-Trichloroethane (Subchronic)
1,1,1-Trichloroethane (acute)
1,1,1-Trichloroethane (short-term)
1,1,1-Trichloroethane (Subchronic)
Trichloroethylene (developmental immunotoxicity)
Trichloroethylene (heart malformations)
Trichloroethylene (adult immunological effects)
Trichloroethylene (adult immunological effects)
Trichloroethylene (heart malformations)
Trichlorofluoromethane
Trichlorophenol
Trichlorophenol
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
Trichloropropane
1,2,3-Trichloropropane
Trichloropropane
Tricresol
Tridiphan
Triethylamine
Triethylene glycol monobutyl ether
Triethylene glycol monoethyl ether
Trifluralin
Trimethylpentane
1,3,5-Trinitrobenzene
Trinitrotoluene (TNT)
Uranium, natural
Uranium, soluble salts
Vanadium pentoxide
Vernam
Vinclozolin
Vinyl acetate
Vinyl bromide
Vinyl chloride
Vinyl chloride
Warfarin
White phosphorus
Xylenes
Xylenes
Zinc and Compounds
Zinc cyanide
Zinc phosphide
Zineb
Pentabromodiphenyl ether (BDE-99)

Tetrabromodiphenyl ether (BDE-47)
Hexabromodiphenyl ether (BDE-153)

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PCE_DESC
Hepatotoxicity
blank
blank
Inhibition of brain ChE
Degeneration of olfactory epithelium
Salivation, increased ALT and ornithine carbamyl transferase significant increases in triglyceride and decreased blood glu
Nephropathy
blank
Mortality
General toxicity
blank
Mortality and kidney lesions
blank
Decreased survival
Degenerative nerve changes
Degenerative nerve changes
Degeneration of the nasal olfactory epithelium
Reduced pup weight
Degeneration and inflammation of nasal respiratory epithelium; hyperplasia of mucous secreting cells
blank
Hemosiderosis, hemolytic anemia
No adverse effects (maternal and fetal toxicity evaluated)
Sweating as clinical sign of AChE inhibition
Brain ChE inhibition in females
Liver toxicity
Decreased body weight
Impaired renal function and increased liver and kidney weights
Functional and histological peripheral neurotoxicity
Body weight and clinical parameters
Increased organ weights
Liver toxicity
blank
Increased mean blood sugar concentration; slight hypothermia
Lack of evidence of decreased pulmonary function or changes in subjective symptomatology
blank
blank
Radioactive iodide uptake inhibition (RAIU) in the thyroid
Decrease in body weight
Lack of toxicity
blank
No observed effects
Longevity, blood glucose, and cholesterol
Pulmonary toxicity, chronic interstitial inflammation
Liver effects; organ weight changes
blank
Reduced birth weights

blank

Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody

Hyperpigmentation, keratosis and possible vascular complications

Increased hemolysis, abnormal RBC morphology, and increased spleen weight

blank

Liver cell enlargement

Lower ovarian weight, lower liver/body weight

Decreased body weight gain

Increased retinal folds in weanlings, decreased viability and lactation indices, decreased pup body weight, increase of de:

blank

Nephropathy

blank

Mild cholinergic symptoms and RBD ChE inhibition

Decreased body weight gain, erythrocyte count and hemoglobin level

Decreased body weights in males, inflammatory foci in kidneys of females

Depressed erythrocyte counts

Decreased pup weanling weights

Blood loss into the gastrointestinal tract; coagulation defect in male and female dogs

blank

Forestomach lesions, kidney toxicity

Decreased lymphocyte count

Decreased lymphocyte count

Brain cell vacuolization; liver cell alterations in females

blank

blank

blank

blank

No adverse effects observed

blank

blank

Small intestinal lesions

Beryllium sensitization and progression to CBD

Decreased pup survival

Tremors

Kidney damage

Decrease in hemoglobin and possible erythrocyte destruction

blank

blank

blank

Reduced mean body weight

Decreased fetal weight (developmental)

Renal effects: urothelial hyperplasia

blank

Hepatocellular cytomegaly in female B6C3F1 mice

Hepatocellular cytomegaly in male B6C3F1 mice

Hepatocellular cytomegaly in female B6C3F1 mice

Hepatocellular cytomegaly in male B6C3F1 mice

blank
Renal cytomegaly
blank
Hepatic lesions
Degenerative and proliferative lesions of the olfactory epithelium of the nasal cavity
Epithelial hyperplasia of the forestomach
blank
No adverse effects
No effects
Ovarian atrophy
Hypoactivity and ataxia
Significantly increased liver-to-body weight and liver-to-brain weight ratios
Increased relative liver weight in male dogs
blank
No adverse effect
blank
Significant proteinuria
Significant proteinuria
No adverse effects
Reduced offspring body weight
Kidney and bladder toxicity
Decreased mean body weights
Kidney and liver toxicity
RBC and plasma cholinesterase inhibition, and testicular and uterine effects
Peripheral nervous system dysfunction
Fetal toxicity/ malformations
Elevated serum SDH activity
Fatty changes in the liver
blank
Decreased body weight
Reduced weight gain, organ weight changes, increased mortality
Increased incidence of alveolar epithelial hyperplasia in the lungs of male and female rats
CNS depression and GI irritation in humans
Hepatocyte degeneration
Hepatic necrosis
Hepatic effects
Renal lesions (glomerulosclerosis) in female Wistar rats
Increase in WBC, decreased in RBC in females, increase in alkaline phosphatase in males
No observed adverse effects
No adverse effects
Vascular congestion and peribronchial edema
Neurodevelopmental effects
Neurodevelopmental effects
No adverse effects
Squamous hyperplasia of the nasal respiratory epithelium
Nonneoplastic lesions of splenic capsule
Histopathologic changes in liver

Decreased stool quantity, food consumption and body weight gains; hyperirritability (maternal effects)
 blank
 blank
 blank
 Increased kidney, adrenal and pituitary weights
 Moderate/marked fatty cyst formation in the liver and elevated SGPT
 blank
 Dyspnea, abnormal appearance, liver enlargement
 Reproductive effects
 blank
 blank
 blank
 Increase in incidence of olfactory atrophy, alveolar hyperplasia, and splenic hematopoietic proliferation in male F344/N r
 Renal tubular epithelial vacuolation
 Decrease in body weight gain
 Kidney, spleen, liver, and bone marrow toxicity
 blank
 Decreased body weight
 No effects observed
 None reported
 Nasal septum atrophy
 Lactate dehydrogenase in bronchioalveolar lavage fluid
 blank
 blank
 blank
 Decreased body and organ weights, histopathologic alterations in liver and kidney
 blank
 blank
 Increased average kidney weight in female rats
 Increased kidney weights in female rats and adrenal weights in male and female rats
 blank
 No adverse effects
 blank
 blank
 No adverse effects
 Reduced pup weights in the F1 and F2 generations
 Body weight depression
 Testicular damage
 Reduced body weight gain preceding pregnancy; reduced body weight gain in offspring during weaning period
 G.I. tract disturbances
 Hematologic effects
 Effects on the lungs, liver, kidney, thyroid and thyroid hormones in males and females and eyes of females
 Increased kidney body weight ratio
 Tremors
 Neurobehavioral effects
 ChE inhibition, optic nerve degeneration
 blank

blank
blank
blank
Testicular effects
Liver/body weight ratio and hepatic microsomal enzyme induction
Hepatic lesions
blank
blank
Nasal inflammation
Testicular atrophy, liver peliosis, and adrenal cortical degeneration
Testicular atrophy, liver peliosis, and adrenal cortical degeneration
Increased mortality
Maternal and fetal toxicity
Lesions observed in the testes, cerebrum, cerebellum, and liver.
No adverse effects observed
Increased liver weights in P1 males
blank
blank
Reduced body weight
blank
blank
Liver lesions
blank
blank
Decrease in number of antibody forming cells (AFCs) against sheep red blood cells (sRBCs) in male mice
Increased relative kidney weight in male rats
Liver toxicity (fatty change)
Liver toxicity (fatty change)
Liver toxicity
Hepatic effects (hepatic vacuolation)
Decreased delayed hypersensitivity response
Internal hemorrhage, mortality
Hematologic, hepatic and renal toxicity
Hyperplasia of the nasal mucosa
Myocardial degeneration, hepatotoxicity and nephrotoxicity
Chronic irritation
Hypertrophy/ hyperplasia of the nasal respiratory epithelium
Plasma and RBC ChE inhibition in males and females; brain ChE inhibition in males
Decreased brain cholinesterase activity
blank
Liver lesions
Pulmonary inflammation and histopathology
Decreased growth rate, food consumption and altered organ weights
blank
blank
blank
Changes in body weight and liver weight increased liver weight of male and female parents; reduced ossification and slig

Increased relative liver weight
Decreased body weight
Methemoglobin and sulfhemoglobin formation
No adverse effects observed
No effects related to treatment
Increased absolute and relative liver weight
Brain ChE inhibition
blank
blank
Chronic kidney inflammation
blank
Splenomegaly, increased splenic hemosiderosis and hematopoiesis
blank
Digestive disturbances and minimal hepatic changes suggestive of liver abnormalities
Clinical signs (lethargy, prostration, and ataxia) and hematological changes
Changes in blood pressure and body weight; histopathological changes in liver, kidney and spleen
Body weight changes and histopathological changes of internal organs (liver, spleen and kidneys)
Cataract formation
blank
Increased splenic weight
Cataract formation
Neurotoxicity, Heinz bodies and biliary tract hyperplasia
blank
Decreased fetal weight
Liver and kidney toxicity
Liver toxicity
Decreased body weight gain, and increased liver and kidney weights
blank
Minimal lens opacity and cataracts
ChE inhibition, optic nerve degeneration
Nasal olfactory lesions
Abnormal pigments in blood
Thyroid toxicity
Reduced body weight gain in males and females; increased incidence of marked progressive glomerulonephrosis and blo
Increased absolute and relative weights of stomach and small intestine
Mild histological lesions in liver, occasional convulsions
Changes in the nasal turbinates
Degenerative lesions of the nasal cavity
Plasma ChE inhibition
Plasma cholinesterase inhibition
Decreased testis weight, seminiferous tubule degeneration and decreased hemoglobin
Mortality and body weight loss
blank
Delayed fetal ossification
Degenerative cardiomyopathy
Depressed body weights
Neurotoxicity

Developmental toxicity
Liver and kidney toxicity
blank
Kidney toxicity
Hemosiderin deposition in the liver
Hemosiderin deposition in the liver
blank
Increased incidence of thyroid hyperplasia
blank
Kidney damage and reduced lifespan
Elevated serum bilirubin and AST levels, increased urinary volume
ChE inhibition
No adverse effects
Nephropathy, increased liver weights, hematological alterations, and clinical effects
Decreased RBC, packed cell volume and hemoglobin
Objectionable dental fluorosis, a cosmetic effect
Glomerulonephritis, atrophic testes, eye keratitis; decreased body weight and organ weights
Increased incidence of hepatocellular changes including fatty change and vacuolation (M); increased susceptibility to stre
Decreased body weight and body weight gains in both doses; increased liver weights at high dose
Decreases in body weight gain; increase in plantar ulcer (females)
Decreased body weight gain, altered serum chemistry parameters
blank
Cholinesterase inhibition, cholinergic symptoms, and increased liver weight
Reduced weight gain, histopathology in rats
blank
Slight testicular degeneration
Hepatic lesions
Mild hepatocellular vacuolization
blank
Increased absolute and relative kidney weights in males
Weight gain retardation, enlarged adrenals, hydropic renal pelvis and hematopoietic effects
Increased incidence of renal tubular dilation in F3b offspring
Reduced relative kidney weights in F0, F1, and F2b adults; reduced fertility in the F1/F2b generation
Reduced body weight gains in males, reduced serum sodium in males and females
Liver weight increases in males
Increased liver-to-body weight ratio in both males and females
blank
Induced serum carboxylesterase activity
blank
Liver effects
blank
blank
blank
blank
blank
Liver and kidney toxicity
blank

Suppurative inflammation of the nose
Chronic irritation
blank
Neurotoxicity
Atrophy and degeneration of renal tubules
Swollen salivary glands, status spongiosis in brain and optic nerve
Inflammation of the prostate
Degeneration of olfactory epithelium
Peripheral neuropathy (decreased MCV at 12 weeks)
Motor conduction velocity of the sciatic-tibial nerve
Axonal swelling of the peripheral nerve
Decreased body weight
blank
Hyperplasia of nasal mucosa larynx and trachea
CNS symptoms and thyroid effects
No adverse effects
Nasal lesions of the olfactory mucosa
blank
Decreased body weight gain
Decreased body weight gain, skeletal myopathy, slight anemia, bone marrow hyperplasia, elevated serum SGOT, SGPT, C
blank
Increased RBC Heinz bodies; decreased prostate weight
Hypoactivity and ataxia
No observed effects
Reduced hemoglobin concentration, lowered hematocrits, and altered organ weights
No adverse effects observed
Increased BUN; decreased serum AP and AST; decreased food consumption efficiency; increased heart/body weight
Increased absolute and relative liver weight; hepatocytomegaly in males
blank
blank
Abnormal blood pigment
Liver effects
RBC ChE depression
No adverse effects
Renal dysfunction
Increased thyroid weight
CNS effects
Impairment of neurobehavioral function
Sedation and tonic-clonic spasms; decreased food intake and body weights; hematologic effects
Autoimmune effects
Hand tremor; increases in memory disturbances; slight subjective and objective evidence of autonomic dysfunction
Ataxia, delayed neurotoxicity and weight loss
Ataxia, delayed neurotoxicity and weight loss
Increased serum alkaline phosphatase levels and increased liver-to-brain weight ratio
Increased SGOT and SGPT levels
ChE inhibition
Increased SAP and SGPT, and decreased brain weight

Liver toxicity
Kidney and spleen pathology
Excessive loss of litters
Testicular effects
blank
Cerebellar lesions
blank
Developmental toxicity (skeletal variations)
Decreased pup body weight
Reduced fetal body weight, skeletal variations, and increased fetal death in mice, and skeletal variations in rats.
blank
None
Degeneration/ atrophy of olfactory epithelium (male rats)
RBC, ChE inhibition; reduced hemoglobin, hematocrit and RBCs
Increased absolute and relative liver and kidney weights and increased severity of spontaneous renal lesions (females), ii
Male reproductive toxicity and other effects
Increased absolute and relative kidney weights
Kidney and liver toxicity
Hyperplasia of olfactory epithelium
blank
Developmental neuropsychological impairment
Developmental neuropsychological impairment
Pulmonary alveolar proteinosis
blank
Decreased body weights and neurotoxicity
Decreased body weights and neurotoxicity
Decreased body weight gain
Liver and kidney effects, decreased body weight, mortality
Liver cytomegaly, fatty metamorphosis, angiectasis; thyroid cystic follicles
Reproductive toxicity
Increased uric acid levels
No observed effects
Brain ChE inhibition
Decreased mean terminal body weight in males
Nasal effects: hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively
Decreased body weight gain in parental animals and pups
blank
blank
blank
Decreased body and organ weights
blank
Early clinical signs of methemoglobinemia in excess of 10% (0-3 months old infants formula)
blank
Methemoglobinemia
Increased methemoglobin levels
Bronchiolization of the alveoli and olfactory degeneration
Increased methemoglobin levels

blank

Reduced weight gain in female rats, maternal/ fetal toxicity in rats, and equivocal evidence of developmental toxicity in r

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Liver focal vacuolization and nodules

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Liver and thyroid effects

Liver cell enlargement

Induction of hepatic enzymes; liver histopathology

Hepatic lesions

Increases in serum cholesterol, alkaline phosphatase, and relative liver and kidney weights, and decreases in alanine trar

Increased levels of serum proteins and increased liver weights

Decreased body weight gain and food consumption

Increased absolute liver weight and nonneoplastic lesions

Elevated liver weights, serum cholesterol, hepatic aminopyrine N-demethylase activity, and alanine transaminase levels

Chronic pneumonitis

blank

Increase in serum alkaline phosphatase and liver weight, and hepatic lesions

Induction of hepatic enzymes

Liver and kidney toxicity

blank

Liver toxicity

Hepatotoxicity

blank

Increased liver weights

blank

No adverse effects

Decreased maternal weight gain

Increased relative and absolute liver weights and degenerative liver lesions

Renal damage

blank

Collagen staining indicative of fibrosis

Reduced body weight (males), liver cell vacuolation, cholinesterase inhibition

Body weight and clinical parameters

Decreased body weight

Bronchiolar fibrosis

Lung and kidney histopathology

Increased liver weights

Transient plasma ChE depression

blank

No observed effects
No observed effects
Increase in SAP and liver weights, liver histopathology
No treatment related effects observed
Liver and kidney degeneration and bone marrow atrophy
No effects
Decreased weight gain, food consumption; increased relative liver weights
Increased relative spleen weight in females
Reduced body weight gain; increased resorption, reduced body weight, delayed ossification (maternal and fetal)
No adverse effects observed at the HDT
Renal and hepatotoxicity
Decrease in body weight
Increase in male spleen weight and ChE depression in females
Gastric mucosal irritation
blank
Atrophy of olfactory epithelium
blank
blank
Mild reversible sedation
Nest-like infolds of the nasal respiratory epithelium
blank
Decreased packed cell volume, hemoglobin, erythrocytes in females
Neurological dysfunction
Kidney effects (renal tubular pathology, decreased kidney weights)
Increased liver weight
No adverse effects reported
blank
blank
blank
blank
blank
Reproductive toxicity
Reduced pup weight
Hypertrophy of adrenal cortex (both sexes); hematologic effects (males)
Clinical selenosis
Clinical selenosis
blank
blank
Mild anemia in males
Argyria
No observed effects
Reduction in weight gains; hematological changes in females
Clinical sign (e.g., hunched postures) and reduced body weight
No observed effects
Reduced body weight
Increased heart weight in females and males; decreased testis weight and altered spermatogenesis in males.
Rachitic bone

Toxicity/histopathology
Red blood cell and liver effects
CNS effects
Testicular atrophy
Depressed body weight gain in F1 females
Increase in thyroid/body weight ratio; slight increase in liver weights; elevated alkaline phosphatase
Hematologic effects in females
blank
Kidney lesions
blank
Mineralization of the kidneys in males, hepatic clear cell change in females
Increased relative liver weight in rats
Neurotoxicity (reaction time, cognitive effects)
Neurotoxicity (color vision)
Neurotoxicity (reaction time, cognitive effects)
Neurotoxicity (color vision)
Increased liver weights and centrilobular hypertrophy
Reduced body weight gain, increased liver and kidney weights, and RBC ChE inhibition
Histopathology of liver and thymus
Depressed RBC and plasma cholinesterase activity
Leydig cell hyperplasia
Increased liver weight and centrilobular cytomegaly; CNS effects (narcosis)
blank
blank
blank
blank
blank
blank
blank
blank
Decrease in body weight, increase in BUN
Decreased body weight, decreased spermatogenesis, and histological evidence of hyperthyroidism
Neurotoxicity
Increased kidney weight
Neurological effects in occupationally-exposed workers
Chronic lung-function decline
blank
Decreased body weight gain in males; increased food and water consumption in males and females
Increased hemosiderin deposition, serum alkaline phosphatase, and liver weight in females
Centrilobular hepatocytomegaly in males
Increased liver-to-body weight ratio and hepatic microsomal enzyme induction
blank
blank
Immunosuppression
Psychomotor impairment
Hepatocellular necrosis
Increased adrenal weights; vacuolization of zona fasciculata in the cortex

blank
Clinical serum chemistry
Liver histopathologic changes
Reduced body weight
Performance on neurobehavioral tests
Performance on neurobehavioral tests
Liver histopathologic changes
Decreased plaque-forming cell (PFC) response, increased delayed-type hypersensitivity in B6C3F1 mice (development Im
Increased fetal cardiac malformations in Sprague-Dawley rats (heart malformations)
Decreased thymus weight in female B6C3F1 mice (adult immunological effects)
Decreased thymus weight in female B6C3F1 mice (immunotoxicity)
Increased fetal cardiac malformations in Sprague-Dawley rats (heart malformations)
Survival and histopathology
Liver and kidney pathology
blank
Histopathological changes in liver
Increased urinary coproporphyrins
peribronchial lymphoid hyperplasia in male rats
Increased absolute liver weight in male rats
Mild lesions in liver, kidney and thyroid
blank
Decreased fertility index and depressed body weight of dams
No observed adverse effects
blank
blank
Increased liver weights; increase in methemoglobin
blank
Methemoglobinemia and spleen-erythroid cell hyperplasia
Liver effects
blank
Initial body weight loss; moderate nephrotoxicity
Decreased hair cystine
Decreased body weight
Organ weight changes
Nasal epithelial lesions
Hypertrophy, basophilic and eosinophilic foci, in the liver
Liver cell polymorphism
Liver cell polymorphism
Increased prothrombin time
Parturition mortality; forelimb hair loss
Decreased body weight, increased mortality
Impaired motor coordination (decreased rotarod performance)
Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers
No observed effects
Reduction of food intake and body weight
Thyroid hyperplasia
Neurobehavioral effects

Neurobehavioral effects
Neurobehavioral effects

Complete?	System1	organ specific?	System2	organ specific?
y	liver	y		
y				
y				
y	nervous system			
y	nose			
y	digestive	n	excretory	
y	excretory	y		
y				
y				
y				
y	excretory	y		
y				
y	nervous system			
y	nervous system			
y	nose			
y				
y	nose			
y				
y				
y				
y	nervous system			
y	liver	y		
y				
y	excretory	y	liver	
y	nervous system			
y				
y				
y	liver	y		
y				
y				
y	respiratory			
y				
y				
y	endocrine	y		
y				
y				
y				
y				
y	respiratory			
y	liver	y		
y				
y				

y				
y	eye	y	hair/skin	y
y	hair/skin	y	circulatory	n
y	Lymphatic/immunologic			
y				
y	liver	y		
y	Reproductive		liver	
y				
y				
y	excretory	y		
y				
y				
y	excretory	y		
y				
y				
y	digestive	n		
y				
y	digestive	y	excretory	
y	Lymphatic/immunologic			
y	Lymphatic/immunologic			
y	nervous system		liver	
y				
y				
y				
y				
y				
y				
y	digestive	y		
y	digestive	n		
y				
y	nervous system			
y	excretory	y		
y				
y				
y				
y				
y	excretory	y		
y				
y	liver	y		
y	liver	y		
y	liver	y		
y	liver	y		

y				
y	excretory	y		
y				
y	liver	y		
y	nose			
y	digestive	y		
y				
y				
y				
y	Reproductive			
y	nervous system			
y	liver	y		
y	liver	y		
y				
y				
y				
y	excretory	n		
y	excretory	n		
y				
y				
y	excretory	y		
y				
y	excretory	y	liver	
y	Reproductive			
y	nervous system			
y				
y				
y				
y	liver	y		
y				
y				
y				
y	respiratory			
y	nervous system		digestive	
y	liver	y		
y	liver	y		
y	liver	y		
y	excretory	y		
y				
y				
y				
y	Circulatory	n	respiratory	y
y	nervous system			
y	nervous system			
y				
y	nose			
y	Lymphatic/immunologic			
y	liver	y		

y	digestive	n	
y			
y			
y			
y	excretory	y	endocrine
y	liver	y	
y			
y	respiratory		liver
y	Reproductive		
y			
y			
y			
y	nervous system		respiratory
y	excretory	y	
y			
y	excretory	y	lymphatic/immunological
y			
y			
y			
y	nose		
y	respiratory		
y			
y			
y			
y	liver	y	excretory
y			
y			
y	excretory	y	
y	excretory	y	endocrine
y			
y			
y			
y			
y			
y			
y	Reproductive		
y			
y	digestive	n	
y			
y	respiratory		liver
y	excretory	y	
y	nervous system		
y	nervous system		
y	nervous system		
y			

y				
y				
y				
y	Reproductive			
y	liver	y		
y	liver	y		
y				
y				
y	nose			
y	Reproductive		liver	
y	Reproductive		liver	
y				
y				
y	Reproductive		nervous system	
y				
y	liver	y		
y				
y				
y				
y				
y	liver	y		
y				
y				
y	Lymphatic/immunologic			
y	excretory	y		
y	liver	y		
y	liver	y		
y	liver	y		
y				
y				
y	Circulatory	n		
y	liver	y	excretory	
y	nose			
y	Circulatory	n	liver	y
y				
y	nose			
y	nervous system			
y	nervous system			
y				
y	liver	y		
y	respiratory			
y				
y				
y				
y				
y	liver	y	excretory	

y	liver	y	
y			
y			
y			
y			
y	liver	y	
y	nervous system		
y			
y			
y	excretory	y	
y			
y	Lymphatic/immunologic		
y			
y	liver	y	
y	nervous system		
y	circulatory	n	liver y
y	liver	y	lymphatic/immunological
y	eye	y	
y			
y	Lymphatic/immunologic		
y	eye	y	
y	nervous system		liver
y			
y			
y	liver	y	excretory
y	liver	y	
y	liver	y	excretory
y			
y	eye	y	
y	nervous system		
y	nose		
y			
y	endocrine	y	
y	excretory	y	circulatory
y	digestive	y	
y	liver	y	
y	nose		
y	nose		
y			
y			
y	Reproductive		
y			
y			
y	skeletal		
y	Circulatory	y	
y			
y	nervous system		

y			
y	liver	y	excretory
y			
y	excretory	y	
y	liver	y	
y	liver	y	
y			
y	endocrine	y	
y			
y	excretory	y	
y	excretory	n	
y			
y			
y	excretory	y	liver
y	Circulatory	n	
y	mouth		
y	excretory	y	reproductive
y	liver	y	
y	liver	y	
y	musculatory		hair/skin
y			
y			
y	liver	y	
y			
y			
y	Reproductive		
y	liver	y	
y	liver	y	
y			
y	excretory	y	
y	endocrine	y	kidney
y	excretory	y	
y	excretory	y	
y			
y	liver	y	
y	liver	y	
y			
y			
y			
y	liver	y	
y			
y			
y			
y			
y	liver	y	excretory
y			

y	nose		
y			
y			
y	nervous system		
y	excretory	y	
y	digestive	y	nervous system
y	Reproductive		
y	nose		
y	nervous system		
y	nervous system		
y	nervous system		
y			
y			
y	nose		
y	nervous system		
y			
y	nose		
y			
y			
y	skeletal		
y			
y	Reproductive		
y	nervous system		
y			
y			
y			
y	Circulatory	n	
y	liver	y	
y			
y			
y			
y	liver	y	
y			
y			
y	excretory	y	
y	endocrine	y	
y	nervous system		
y	nervous system		
y	nervous system		
y			
y	nervous system		
y	nervous system		
y	nervous system		
y	liver	y	nervous system
y			
y			
y	nervous system		

y	liver	y	
y	excretory	n	lymphatic/immunological
y			
y	Reproductive		
y			
y	nervous system		
y			
y	skeletal		
y			
y	skeletal		
y			
y			
y	nose		
y			
y	liver	y	excretory
y	Reproductive		
y	excretory	y	
y	excretory	y	liver
y	nose		
y			
y	nervous system		
y	nervous system		
y	respiratory		
y			
y	nervous system		
y	nervous system		
y			
y	liver	y	excretory
y	liver	y	endocrine
y	Reproductive		
y	excretory	n	
y			
y	nervous system		
y			
y	nose		
y			
y			
y			
y			
y			
y			
y			
y			
y			
y			
y	respiratory		nose
y			

y			
y			
y			
y	liver	y	
y			
y			
y			
y			
y			
y			
y			
y			
y	liver	y	endocrine
y	liver	y	
y	liver	y	
y	liver	y	
y	liver	y	excretory
y	liver	y	
y			
y	liver	y	
y	liver	y	
y	respiratory		
y			
y	liver	y	
y	liver	y	
y	liver	y	kidney
y			
y	liver	y	
y	liver	y	
y			
y	liver	y	
y			
y			
y	liver	y	
y	excretory	n	
y			
y			
y	liver	y	
y			
y	respiratory		
y	respiratory		excretory
y	liver	y	
y			
y			

y			
y			
y	liver	y	circulatory
y			
y	liver	y	excretory
y			
y	liver	y	
y	Lymphatic/immunologic		
y	skeletal		
y			
y	excretory	y	liver
y			
y	lymphatic/immunologic		
y	digestive	y	
y			
y	nose		
y			
y			
y	nervous system		
y	nose		
y			
y			
y	nervous system		
y	excretory	y	
y	liver	y	
y			
y			
y			
y			
y			
y	Reproductive		
y			
y	endocrine	y	
y			
y			
y			
y			
y			
y			
y			
y			
y			
y			
y	Circulatory	y	reproductive
y	skeletal		

y			
y	liver	y	
y	nervous system		
y	Reproductive		
y			
y	endocrine	y	liver
y			
y			
y	excretory	y	
y			
y	excretory	y	liver
y	liver	y	
y	nervous system		
y	nervous system		
y	nervous system		
y	nervous system		
y	liver	y	
y	liver	y	excretory
y	liver	y	lymphatic/immunological
y			
y	Reproductive		
y			
y			
y			
y			
y			
y			
y			
y			
y	Reproductive		endocrine
y	nervous system		
y	excretory	y	
y	nervous system		
y	respiratory		
y			
y			
y	liver	y	
y	liver	y	
y	liver	y	
y			
y			
y	Lymphatic/immunologic		
y	nervous system		
y	liver	y	
y	endocrine	y	

y			
y			
y	liver	y	
y			
y			
y	Circulatory	y	
y	Lymphatic/immunologic		
y	Lymphatic/immunologic		
y	Circulatory	y	
y			
y	liver	y	excretory
y			
y	liver	y	
y	excretory	n	
y	Lymphatic/immunologic		
y	liver	y	
y	liver	y	excretory
y			
y	Reproductive		
y			
y			
y			
y	liver	y	
y			
y	Lymphatic/immunologic		
y	liver	y	
y			
y	excretory	y	
y	hair/skin	y	
y			
y			
y	nose		
y	liver	y	
y	liver	y	
y	liver	y	
y			
y	hair/skin	y	
y			
y	nervous system		
y			
y			
y			
y	endocrine	y	
y	nervous system		

y nervous system
y nervous system

System3

organ specific

System4

organ specific

System5

follow-on?

reproductive

yes

yes

yes

yes

yes

yes

yes

lymphatic/immunologic

liver

skeletal

excretory

endocrine

eye

endocrine
endocrine

liver

excretory

yes

excretory
excretory

y

lymphatic/immunological y

yes

circulatory

yes

eye

yes

yes

yes

yes

yes

reproductive

eye

yes

endocrine

yes

yes

skeletal

yes

yes

endocrine

System type

Systemic-blood

Systemic-mortality

Systemic-toxicity

Systemic-mortality

Systemic-developmental

Systemic-blood

systemic-blood

systemic-body weight change

systemic-body weight change; systemic-unspecified clinical

systemic-unspecified organ weight change

systemic-blood; systemic-hypothermia

systemic-body weight change

systemic-blood

systemic- unspecified organ weight change

systemic-body weight change; systemic-developmental

systemic-blood

systemic-blood

Systemic-body weight change

systemic-body weight change

systemic-developmental; systemic-mortality

systemic-blood

systemic-body weight change; systemic-blood

systemic-body weight change

systemic-blood

systemic-body weight change; systemic-developmental

systemic-blood

systemic-blood

systemic-blood

systemic-developmental; systemic-mortality

systemic-blood

systemic-body weight change

systemic-developmental; systemic-body weight change

systemic-developmental; systemic-body weight change

systemic-body weight change

systemic-blood

systemic-developmental
systemic-blood

systemic-body weight change
systemic-body weight change; systemic-unspecified organ weight change; systemic-mortality

systemic-blood

systemic-developmental
systemic-developmental

systemic-body weight change; systemic-food/water consumption change; systemic-mortality; systemic-irritability

Systemic-appearance

systemic-body weight change

systemic-body weight change

Systemic-body weight change; systemic-unspecified organ weight change

systemic-developmental; systemic-body weight change
systemic-body weight change

systemic-body weight change; systemic-developmental

systemic-blood

systemic-blood

systemic-mortality
systemic-toxicity

systemic-body weight change

systemic-blood

systemic
systemic-mortality
systemic-blood

systemic

systemic-blood

systemic-developmental; systemic-food/water consumption change; systemic-unspecified organ weight change

Systemic-body weight change; developmental

systemic-body weight change
systemic-blood

systemic-clinical; systemic-blood
Systemic-body weight change
Systemic-body weight change

systemic-blood

systemic-body weight change; systemic-developmental

Systemic-body weight change

systemic-blood

systemic-body weight change

Systemic

systemic-blood
systemic-blood
systemic-blood
systemic-mortality; systemic-body weight change

systemic-developmental

systemic-body weight change

systemic-developmental; systemic-toxicity

systemic-life span

systemic-blood

systemic-blood

systemic-blood; systemic-clinical effects

systemic-blood

systemic-body weight change; systemic-unspecified organ weight change

Systemic-body weight change

Systemic-body weight change

systemic-body weight change; systemic-blood

systemic-cholinesterase

systemic-body weight change

systemic-body weight change; systemic-blood

systemic-developmental; systemic-fertility

systemic-body weight change; systemic-blood

systemic-blood

systemic

systemic-body weight change

systemic-body weight change

systemic-body weight change; systemic-blood

systemic-blood

systemic-blood; systemic-unspecified organ weight change

systemic-blood; systemic-change in food/water consumption; systemic-body weight change

systemic-blood

systemic-blood

systemic-body weight change; systemic-blood

systemic-autoimmune

systemic-body weight change

systemic-body weight change

systemic-blood

systemic-blood

systemic-blood

systemic-blood

systemic-developmental; systemic-mortality

systemic-developmental

systemic-developmental; systemic-body weight change

systemic-developmental; systemic-body weight change; systemic-mortality

systemic-blood

systemic-developmental

systemic-developmental

systemic-body weight change

systemic-body weight change

systemic-body weight change

systemic-body weight change; systemic-mortality

systemic-body weight change

systemic-body weight change; systemic-developmental

systemic-body weight change; systemic-unspecified organ weight change

systemic-blood

systemic-blood

systemic-blood

systemic-blood

systemic-body weight change; systemic-developmental; systemic-toxicity

systemic-blood

systemic-blood

systemic-body weight change; systemic-food/water consumption change

systemic-blood

systemic-blood

systemic-body weight change

systemic

systemic-body weight change; systemic-blood

systemic-body weight; systemic-unspecified clinical

systemic-body weight change

systemic-blood

systemic-blood

systemic-body weight change

systemic-body weight change; systemic-developmental

systemic-body weight change

systemic-blood

systemic-blood

systemic-body weight change; systemic-developmental

systemic-blood

systemic-toxicity

systemic-toxicity

systemic-blood

systemic-toxicity

systemic-blood; systemic-body weight change

systemic-clinical; systemic-body weight change

systemic-body weight change

systemic-toxicity
systemic-blood

systemic-body weight change
systemic-blood
systemic-blood

systemic-blood

systemic-blood

systemic-body weight change
systemic-body weight change

systemic-body weight change; systemic-food/water consumption change
systemic-blood

systemic

systemic-blood

systemic-body weight change

systemic-blood; systemic-developmental
systemic-developmental

systemic-developmental
systemic-mortality

systemic-body weight change

systemic-blood

systemic-blood

systemic-body weight change

systemic-body weight change
systemic-unspecified organ weight change

systemic-blood
systemic-mortality
systemic-body weight change; systemic-mortality

systemic-blood

systemic-food/water consumption change; systemic-body weight change

Developmental	No Effects	Notes
---------------	------------	-------

y		
---	--	--

	yes	
--	-----	--

	yes	
--	-----	--

	yes	
--	-----	--

	yes	
--	-----	--

y		
---	--	--

y

y

yes

CBD=common bile duct?

y

y

yes
yes

yes

yes

y

y

yes
yes

y
y

yes

irritability?

yes
yes

yes

yes

y

y

yes

y

y

yes
yes

y

convulsions: nervous or systemic?

y

y

yes

plantar ulcer?

y

salivary gland?

yes

yes

yes

BUN?

yes

y

y

y

y

yes

prostration in females; assumes referring to "paraurethral glands"

y

y

yes

y

y

yes

yes

yes

SAP=serum alkaline phosphatase

yes

yes

y

yes

yes

y

yes

yes

BUN?

y
y

y

yes

yes

RFD_RFC_TYPE_CODE	RFD_RFC_VALUE	RFD_RFC_UNIT_CODE	RFD_RFC_VALUE_TYPE_CODE
RFD	0.06	MKD	D
RFC			
RFD	0.004	MKD	D
RFC	0.009	MCM	D
RFD	0.02	MKD	D
RFD	0.9	MKD	D
RFD	10	UCM	
RFC	0.06	MCM	D
RFD	0.1	MKD	D
RFD	0.013	MKD	D
RFC	0.00002	MCM	
RFD	0.000000006	UCM	D
RFD	0.002	MKD	D
RFC	0.006	MCM	D
RFC	0.001	MCM	D
RFD	0.5	MKD	D
RFC	0.002	MCM	D
RFD	0.01	MKD	D
RFD	0.15	MKD	
RFD	0.001	MKD	D
RFD	0.001	MKD	D
RFD	0.00003	MKD	D
RFD	0.25	MKD	D
RFD	0.005	MKD	D
RFC	0.001	MCM	D
RFD	0.0004	MKD	D
RFD	0.0003	MKD	D
RFD	0.009	MKD	D
RFD	0.0025	MKD	D
RFC	0.1	MCM	D
RFD	0.0007	MKD	D
RFD	0.2	MKD	D
RFC	0.001	MCM	D
RFD	0.3	MKD	D
RFD	0.0004	MKD	D
RFC	0.0002	MCM	D
RFD	0.013	MKD	D
RFD	0.00007	MKD	D

RFD	0.00002 MKD	D
RFD	0.0003 MKD	D
RFC	0.00005 MCM	D
RFD	0.009 MKD	D
RFD	0.05 MKD	D
RFD	0.035 MKD	D
RFD	0.0004 MKD	D
RFD	0.2 MKD	D
RFD	0.004 MKD	D
RFD	0.03 MKD	D
RFD	0.025 MKD	D
RFD	0.3 MKD	D
RFD	0.05 MKD	D
RFD	0.03 MKD	D
RFD	0.1 MKD	D
RFD	0.004 MKD	D
RFC	0.03 MCM	D
RFD	0.003 MKD	D
RFD	4 MKD	D
RFD	0.002 MKD	D
RFC	0.00002 MCM	D
RFD	0.0001 MKD	D
RFD	0.015 MKD	D
RFD	0.05 MKD	D
RFD	0.04 MKD	D
RFD	0.05 MKD	D
RFD	0.2 MKD	D
RFD	0.004 MKD	D
RFC	0.02 MCM	D
RFD	0.008 MKD	D
RFC	0.06 MCM	D
RFD	0.008 MKD	D

RFD	0.02 MKD	D
RFD	0.02 MKD	D
RFC	0.005 MCM	D
RFD	0.0014 MKD	D
RFD	0.02 MKD	D
RFD	0.02 MKD	D
RFC	0.002 MCM	D
RFD	0.1 MKD	D
RFD	0.2 MKD	D
RFD	0.05 MKD	D
RFD	1 MKD	D
RFD	0.001 MKD	DMAX
RFD	0.0005 MKD	DMIN
RFD	0.04 MKD	D
RFD	0.5 MKD	D
RFD	0.002 MKD	D
RFD	0.13 MKD	D
RFD	0.1 MKD	D
RFD	0.005 MKD	D
RFC	0.7 MCM	D
RFD	0.1 MKD	D
RFD	0.004 MKD	D
RFC	0.1 MCM	D
RFD	0.01 MKD	D
RFD	0.1 MKD	D
RFC	0.0009 MCM	D
RFD	0.1 MKD	D
RFD	0.015 MKD	D
RFD	0.0005 MKD	D
RFC	0.0007 MCM	D
RFD	0.0003 MKD	D
RFD	0.02 MKD	D
RFD	0.1 MKD	D
RFD	0.05 MKD	D
RFC	0.0002 MCM	D
RFD	0.03 MKD	D
RFD	0.03 MKD	D
RFC	50 MCM	D
RFC	0.00003 MCM	D
RFD	0.004 MKD	D
RFD	0.02 MKD	D

RFD	0.02 MKD	D
RFC	50 MCM	D
RFD	0.01 MKD	D
RFD	0.08 MKD	D
RFD	0.005 MKD	D
RFC	0.02 MCM	D
RFD	0.015 MKD	D
RFD	0.02 MKD	D
RFD	0.2 MKD	D
RFD	0.05 MKD	D
RFD	1.5 MKD	D
RFD	0.003 MKD	D
RFC	0.000008 MCM	D
RFC	0.0001 MCM	D
RFD	0.005 MKD	D
RFD	0.1 MKD	D
RFC	0.4 MCM	D
RFD	0.02 MKD	D
RFC	0.7 MCM	D
RFD	0.04 MKD	D
RFD	0.09 MKD	D
RFC	6 MCM	D
RFD	5 MKD	D
RFD	0.2 MKD	D
RFD	0.005 MKD	D
RFD	0.01 MKD	D
RFD	0.0075 MKD	D
RFD	0.01 MKD	D
RFD	0.03 MKD	D
RFD	0.025 MKD	D
RFD	0.007 MKD	D
RFD	0.00004 MKD	D

RFC	0.0002 MCM	D
RFD	0.01 MKD	D
RFD	0.02 MKD	D
RFC	0.009 MCM	D
RFC		
RFD	0.009 MKD	D
RFD	0.1 MKD	D
RFD	0.03 MKD	D
RFD	0.004 MKD	D
RFD	0.09 MKD	D
RFC	0.8 MCM	D
RFD	0.2 MKD	D
RFD	0.0005 MKD	D
RFD	0.02 MKD	D
RFD	0.002 MKD	D
RFC	0.2 MCM	D
RFD	0.05 MKD	D
RFD	0.06 MKD	D
RFC		
RFD	0.003 MKD	D
RFD	0.008 MKD	D
RFD	0.01 MKD	D
RFC	0.004 MCM	D
RFD	0.003 MKD	D
RFD	0.03 MKD	D
RFC	0.02 MCM	D
RFD	0.0005 MKD	
RFC	0.0005 MCM	
RFD	0.00005 MKD	D
RFC	0.005 MCM	D
RFD	0.8 MKD	D
RFD	0.6 MKD	D

RFD	0.02 MKD	D
RFD	0.08 MKD	D
RFD	0.02 MKD	D
RFC	40 MCM	D
RFD	0.08 MKD	D
RFD	0.02 MKD	D
RFD	0.0002 MKD	D
RFD	0.1 MKD	D
RFD	0.002 MKD	D
RFC	0.03 MCM	D
RFD	0.02 MKD	D
RFD	0.001 MKD	D
RFD	0.0006 MKD	D
RFD	0.002 MKD	D
RFD	0.0001 MKD	D
RFD	0.002 MKD	D
RFD	0.002 MKD	D
RFD	0.001 MKD	D
RFD	0.03 MKD	D
RFD	0.03 MKD	D
RFD	0.025 MKD	D
RFD	0.0022 MKD	D
RFD	0.00004 MKD	D
RFD	0.01 MKD	D
RFD	0.002 MKD	D
RFD	0.004 MKD	D
RFD	0.006 MKD	D
RFD	0.02 MKD	D
RFD	0.0003 MKD	D
RFC	0.001 MCM	D
RFC	0.02 MCM	D
RFD	0.005 MKD	D
RFD	0.0005 MKD	D
RFC	0.2 MCM	D
RFD	0.9 MKD	D
RFC	10 MCM	D
RFD	0.025 MKD	D
RFD	0.2 MKD	D
RFD	0.00001 MKD	D

RFC	1 MCM	D
RFD	0.1 MKD	D
RFD	2 MKD	D
RFD	0.1 MKD	D
RFC	1.6 MCM	D
RFD	0.00008 MKD	D
RFD	3 MKD	D
RFD	0.008 MKD	D
RFD	0.00025 MKD	D
RFD	0.013 MKD	D
RFD	0.04 MKD	D
RFD	0.04 MKD	D
RFD	0.06 MKD	D
RFD	0.08 MKD	D
RFD	0.02 MKD	D
RFD	0.06 MKD	D
RFD	0.01 MKD	D
RFD	0.1 MKD	D
RFD	0.002 MKD	D
RFD	0.2 MKD	D
RFD	3 MKD	D
RFD	0.001 MKD	D
RFD	0.003 MKD	D
RFD	0.0004 MKD	D
RFD	0.0004 MKD	D
RFD	0.1 MKD	D
RFD	0.00005 MKD	D
RFD	0.013 MKD	D
RFD	0.0005 MKD	D
RFD	0.000013 MKD	D
RFD	0.002 MKD	D
RFD	0.0008 MKD	D
RFD	0.0003 MKD	D

RFC	0.0002 MCM	D
RFD	0.006 MKD	D
RFC	0.03 MCM	D
RFD	0.0007 MKD	D
RFD	0.0003 MKD	D
RFD	0.003 MKD	D
RFC	0.00001 MCM	D
RFC	0.7 MCM	D
RFC	0.03 MCM	D
RFD	0.005 MKD	D
RFD	0.033 MKD	D
RFC	0.02 MCM	D
RFC	0.003 MCM	D
RFD	0.02 MKD	D
RFC	0.002 MCM	D
RFD	0.013 MKD	D
RFD	0.25 MKD	D
RFD	0.04 MKD	D
RFD	0.3 MKD	D
RFD	0.2 MKD	D
RFD	0.015 MKD	D
RFD	0.1 MKD	D
RFD	0.05 MKD	D
RFD	0.002 MKD	D
RFD	0.002 MKD	D
RFD	0.2 MKD	D
RFD	0.02 MKD	D
RFD	0.1 MKD	D
RFD	0.5 MKD	D
RFD	0.005 MKD	D
RFD	0.14 MKD	D
RFC	0.00005 MCM	D
RFD	0.03 MKD	D
RFD	0.0003 MKD	D
RFC	0.0003 MCM	D
RFD	0.00003 MKD	D
RFD	0.00003 MKD	D
RFD	0.06 MKD	D
RFD	0.0001 MKD	D
RFD	0.00005 MKD	D
RFD	0.5 MKD	D

RFD	0.001 MKD	D
RFD	0.025 MKD	D
RFD	0.005 MKD	D
RFC	0.02 MCM	D
RFC	0.09 MCM	D
RFC	5 MCM	D
RFD	0.6 MKD	D
RFC	3 MCM	D
RFD	1.4 MKD	D
RFC	0.7 MCM	D
RFD	0.00025 MKD	D
RFC	3 MCM	D
RFD	0.01 MKD	D
RFD	0.001 MKD	D
RFD	0.0005 MKD	D
RFC	0.0006 MCM	D
RFD	0.0001 MKD	L
RFD	0.0001 MKD	H
RFD	0.004 MKD	D
RFD	0.05 MKD	D
RFD	0.05 MKD	D
RFD	0.15 MKD	D
RFD	0.025 MKD	D
RFD	0.0002 MKD	D
RFD	0.002 MKD	D
RFD	0.005 MKD	D
RFD	0.1 MKD	D
RFD	0.002 MKD	D
RFD	0.02 MKD	D
RFC	0.003 MCM	D
RFD	0.1 MKD	D
RFD	0.02 MKD	D
RFD	1.6 MKD	D
RFD	0.1 MKD	D
RFC		
RFC	0.009 MCM	
RFD	0.002 MKD	D

RFD	0.1 MKD	D
RFC	0.02 MCM	D
RFD	0.04 MKD	D
RFD	0.0007 MKD	D
RFD	0.003 MKD	D
RFD	0.05 MKD	D
RFD	0.05 MKD	D
RFD	0.005 MKD	D
RFD	0.025 MKD	D
RFD	0.003 MKD	D
RFD	0.013 MKD	D
RFD	0.0045 MKD	D
RFD	0.04 MKD	D
RFD	0.002 MKD	D
RFD	0.0008 MKD	D
RFD	0.003 MKD	D
RFD	0.005 MKD	D
RFD	0.05 MKD	D
RFD	0.25 MKD	D
RFD	0.3 MKD	D
RFD	0.006 MKD	D
RFD	0.00008 MKD	D
RFC	0.0003 MCM	D
RFD	0.02 MKD	D
RFD	0.0003 MKD	D
RFC	0.0003 MCM	D
RFC	0.01 MCM	D
RFD	2 MKD	D
RFD	0.07 MKD	D
RFD	0.01 MKD	D

RFD	0.05 MKD	D
RFD	0.2 MKD	D
RFD	0.009 MKD	D
RFD	0.015 MKD	D
RFD	0.004 MKD	D
RFD	0.075 MKD	D
RFD	0.013 MKD	D
RFD	0.005 MKD	D
RFD	0.02 MKD	D
RFD	0.02 MKD	D
RFD	0.002 MKD	D
RFD	0.02 MKD	D
RFD	0.02 MKD	D
RFD	0.013 MKD	D
RFC	0.008 MCM	D
RFC	2 MCM	D
RFC	0.03 MCM	D
RFD	0.25 MKD	D
RFD	0.025 MKD	D
RFD	0.03 MKD	D
RFD	0.001 MKD	D
RFD	0.0005 MKD	D
RFD	0.03 MKD	D
RFD	0.004 MKD	D
RFD	0.025 MKD	D
RFD	0.005 MKD	D
RFD	0.005 MKD	D
RFD	0.09 MKD	D
RFD	0.005 MKD	D
RFD	0.1 MKD	D
RFD	0.005 MKD	D
RFD	0.004 MKD	D
RFD	0.04 MKD	D
RFD	0.03 MKD	D
RFD	0.00002 MKD	D
RFD	0.6 MKD	D

RFD	0.0003 MKD	D
RFD	0.2 MKD	D
RFC	1 MCM	D
RFD	0.025 MKD	D
RFD	0.07 MKD	D
RFD	0.013 MKD	D
RFD	0.001 MKD	D
RFD	0.0003 MKD	D
RFD	0.03 MKD	D
RFD	0.02 MKD	D
RFD	0.006 MKD	
RFC	0.04 MCM	
RFC	0.04 MCM	
RFD	0.006 MKD	
RFD	0.03 MKD	D
RFD	0.03 MKD	D
RFD	0.0000001 MKD	D
RFD	0.0005 MKD	D
RFC	80 MCM	D
RFC		

RFD	0.01 MKD	D
RFD	0.08 MKD	D
RFD	0.005 MKD	D
RFD	0.08 MKD	D
RFC	5 MCM	D
RFC	0.00007 MCM	D

RFD	0.0075 MKD	D
RFD	0.013 MKD	D
RFD	0.01 MKD	D
RFD	0.005 MKD	D

RFD	0.0003 MKD	D
RFD	30 MKD	D
RFD	0.02 MKD	
RFD	0.01 MKD	D

RFD	0.004 MKD	D
RFC	5 MCM	D
RFD	2 MKD	D
RFC		
RFC		
RFC		
RFD	0.0005 MKD	
RFC	0.002 MCM	
RFD	0.0005 MKD	
RFC	0.002 MCM	
RFD	0.0005 MKD	
RFD	0.3 MKD	D
RFD	0.1 MKD	D
RFD	0.008 MKD	D
RFD	0.01 MKD	D
RFC	0.0003 MCM	D
RFD	0.004 MKD	D
RFD	0.005 MKD	D
RFD	0.003 MKD	D
RFC	0.007 MCM	D
RFD	0.0075 MKD	D
RFD	0.03 MKD	D
RFD	0.0005 MKD	D
RFD	0.003 MKD	D
RFD	0.009 MKD	D
RFD	0.001 MKD	D
RFD	0.025 MKD	D
RFC	0.2 MCM	D
RFC	0.003 MCM	D
RFD	0.003 MKD	D
RFC	0.1 MCM	D
RFD	0.0003 MKD	D
RFD	0.00002 MKD	D
RFD	0.2 MKD	D
RFC	0.1 MCM	D
RFD	0.3 MKD	D
RFD	0.05 MKD	D
RFD	0.0003 MKD	D
RFD	0.05 MKD	D
RFD	0.0001 MKD	D

RFD
RFD

0.0001 MKD
0.0002 MKD

D
D

RFD_RFC_UNCERT_FACTOR	RFD_RFC_MOD_FACTOR	RFD_RFC_OVERALL_CONFID_CODE
3000		1 L
30		1 H
1000		1 L
100		1 H
1000		1 M
100		10 M
3000		1 L
100		1 M
30		1 MH
30		1 M
300		1 M
100		1 H
1000		1 M
100		1 H
100		1 L
10		1 M
100		1 M
1000		1 M
100		1 H
1000		1 L
3000		1 L
100		1 M
1000		1 H
1000		1 L
100		1 M
30		1 M
10		1 H
1000		1 L
3000		1 L
3000		1 L
1000		1 L
300		1 M
100		1 H
100		1 M

300	1 M
3	1 M
300	1 M
100	1 H
1000	1 M
100	1 H
300	1 H
300	1 M
100	1 M
100	1 H
100	1 H
100	1 M
100	1 H
100	1 M
1000	1 L
300	1 M
300	1 M
1000	1 M
1	1 M
300	1 LM
10	1 M
1000	1 L
100	1 H
100	10 M
1000	1 L
1000	1 H
66	1 H
300	1 M
1000	1 LM
3000	1 LM
1000	1 LM
3000	1 LM

1000	1 M
1000	1 M
100	1 H
1000	1 M
300	1 M
300	1 M
1000	1 M
1000	1 L
1000	1 L
100	1 H
1000	1 L
10	1 H
10	1 H
100	5 M
100	1 H
1000	1 H
100	1 H
100	1 M
100	1 H
30	1 M
100	1 M
1000	1 M
100	1 M
100	1 H
100	1 H
1000	1 L
100	1 H
1000	1 M
300	1 M
1000	1 L
300	1 M
300	1 M
100	1 M
100	5 M
3000	1 L
100	1 MH
100	1 MH
300	1 M
1000	1 L
3000	1 L
1000	1 M

300	1 M
100	1 M
100	1 M
3000	1 L
1000	1 L
100	1 MH
100	1 M
1000	1 L
300	1 M
100	1 H
100	10 L
300	3 L
90	1 L
300	1 M
1000	1 M
1000	1 L
1000	1 M
100	5 M
100	5 L
300	1 LM
100	1 M
100	1 H
100	1 H
100	1 H
100	1 H
100	1 H
300	1 L
100	1 H
300	1 L
1000	1 L

1000	1 M
1000	1 L
1000	1 M
300	1 M
3000	1 LM
1000	1 L
100	1 H
3000	1 M
1000	1 L
100	1 M
100	1 M
100	1 M
3000	1 L
3000	1 L
30	1 M
100	1 M
100	1 M
100	1 L
1000	1 L
100	1 M
300	1 M
3000	1 L
100	1 H
30	1 H
100	1 M
100	1 M
100	1 M
30	1 M
1000	1 L
300	1 M

1000	1 M
300	1 M
100	1 H
300	1 M
1000	1 L
100	1 H
300	1 M
1000	1 L
10000	1 L
300	1 M
3000	1 L
1000	1 L
1000	1 L
1000	1 L
3000	1 L
1000	1 L
100	1 H
1000	1 L
300	1 M
100	1 M
100	1 M
100	1 M
1000	1 M
10000	1 L
300	1 L
300	1 L
100	1 M
100	1 M
100	1 M
300	1 M
300	1 M
100	1 L
100	1 M
300	1 M
1000	1 L
300	1 M
100	1 M
3000	1 L
1000	1 M

300	1 L
1000	1 L
100	1 H
10	1 MH
10	1 MH
3000	1 M
100	1 L
100	1 H
100	1 H
1000	1 L
3000	1 L
3000	1 L
1	1 H
100	1 H
100	1 H
1000	1 M
100	1 H
100	1 H
100	1 M
100	1 M
100	1 H
1000	1 L
3000	1 L
1000	1 M
3000	1 L
100	1 H
100	1 H
100	1 H
300	1 L
1000	1 L
1000	1 L
100	1 M
1000	1 M

100	1 M
1000	1 L
3000	1 L
1000	1 LM
3000	1 M
100	1 H
100	1 M
300	1 M
3000	1 L
1000	1 M
300	1 M
300	1 L
1000	1 L
100	5 M
300	1 MH
100	1 M
100	1 H
100	1 H
1000	1 L
1000	1 L
1000	1 L
3000	1 L
100	1 H
1000	1 H
300	1 H
100	1 H
10	1 M
100	1 M
1000	1 M
1000	1 L
1	1 M
1000	1 M
1000	1 M
1000	1 H
30	1 M
3000	1 L
3000	1 L
100	1 H
3000	1 L
1000	1 M
1000	1 M

100	1 H
100	1 H
1000	1 L
1000	1 M
1000	1 M
300	1 M
1000	1 L
300	1 LM
100	1 LM
10	1 MH
100	1 M
100	1 M
1000	1 L
3000	1 M
300	1 M
100	1 M
10	1 H
10	1 H
1000	1 L
1000	1 M
1000	1 M
100	1 H
100	1 M
300	1 H
100	1 L
30	1 M
100	1 M
100	1 M
3000	1 L
3000	1 M
300	1 M
300	1 M
1	1 H
1	10 H
30	1 M
1000	1 M

3000	1 M
1000	1 L
100	1 H
300	1 M
1000	1 L
1000	1 L
100	1 H
100	1 M
100	1 M
100	1 H
1000	1 M
100	1 H
300	1 M
1000	1 L
10000	1 L
300	1 M
300	1 M
100	1 H
100	1 M
300	1 MH
1000	1 L
100	1 L
100	1 M
100	1 H
100	1 M
1000	1 L
300	1 M
1000	1 M
100	1 M
25	1 H

100	5 M
100	5 M
100	1 H
1000	1 L
1000	1 L
100	1 M
1000	1 L
1000	1 M
100	1 M
1000	1 M
3000	1 L
300	1 M
3000	1 L
100	1 H
1000	1 LM
300	1 M
100	1 M
100	1 H
100	1 H
3000	1 L
1000	1 M
100	1 M
1000	1 H
100	1 M
100	1 H
3	1 H
3	1 H
100	1 H
3	1 L
100	5 L
100	1 H
1000	1 M
100	5 M
1000	1 M
3000	1 L
300	1 M

10000	1 L
1000	1 M
30	1 M
100	1 H
100	1 H
100	1 M
100	1 H
1000	1 L
3000	1 L
1000	1 M
1000	1 M
1000	1 M
1000	1 M
1000	1 M
1000	1 M
100	1 M
10000	1 M
1000	1 L
100	1 M

100	1 M
100	1 H
1000	1 L
3000	1 M
10	1 H
30	1 M

100	1 H
100	1 H
100	1 H
1000	1 L

100	1 H
10	1 L
1000	1 M
1000	1 M

1000	1 M
100	1 M
1000	1 LM
1000	1
10	1 H
100	1 H
100	1 H
10	1
1000	1 M
1000	1 L
100	1 M
300	1 M
3000	1 L
300	1 MH
3000	1 L
100	1 H
3000	1 L
100	1 H
100	1 M
1000	1 M
1000	1 M
100	1 L
1000	1 L
100	1 H
30	1 H
3000	1 L
30	1 M
30	1 M
100	1 L
1000	1 L
1000	1 M
300	1 M
3	1 MH
100	5 M
10000	1 L
500	1 M
3000	1 L

3000
3000

1 L
1 L

RFD_RFC_DATA_CONFID_CODE	RFD_RFC_STUDY_CONFID_CODE	RFD_RFC_DOSE_TYPE_CODE
L	L	T
H	M	T
L	M	T
H	H	T
M	M	T
M	M	T
L	L	T
M	M	T
MH	MH	
LM	MH	T
M	M	T
H	H	T
M	M	T
H	H	T
M	M	T
H	H	T
L	M	T
L	L	T
M	M	T
H	M	T
L	M	T
M	M	T
M	M	T
M	MH	T
L	M	T
L	L	T
L	L	T
L	L	T
M	M	T
H	H	T
M	M	T

M	M	T
M	M	T
M	H	T
H	H	T
M	M	T
H	H	T
H	M	T
M	H	T
M	L	T
H	H	T
H	H	T
M	M	T
H	M	T
M	M	T
L	M	T
M	M	T
M	M	T
M	M	T
M	M	T
LM	M	T
M	M	T
L	L	T
H	M	T
L	H	T
L	M	T
H	M	T
H	H	B
M	H	T
LM	M	B
LM	M	
LM	M	B
LM	M	

M	M	T
M	M	T
H	M	T
M	M	T
M	L	T
M	L	T
H	H	T
L	H	T
L	M	T
H	H	T
L	M	T
H	M	T
M	NA	T
H	NA	T
M	M	T
H	H	T
H	H	T
H	M	T
M	H	T
M	H	T
M	M	T
M	M	T
M	M	T
M	H	T
H	M	T
H	M	T
L	M	B
H	M	T
M	M	T
M	M	T
L	M	T
M	M	B
M	M	T
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RFD_RFC_DESC

RFD_RFC_UF_DERIV_NOTE_CODE

food
water

Chromic acid mists and dissolved Cr(VI) aerosols
Cr(VI) particulates

A

Low end of BMDL05 range
High end of BMDL05 range

Maternal toxicity and fetotoxicity
Systemic effects

Chronic

Chronic
Chronic

